Pests

1939
February
VOL. 7 NO. 2

ORGAN OF THE PEST CONTROL INDUSTRY

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Termite Control Operators
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Pests

ORGAN OF THE PEST CONTROL INDUSTRY

Exterminators, Fumigators, Termite Control Operators, Entomologists, Insecticide and Supply Manufacturers

COOPERATING WITH NATIONAL PEST CONTROL ASSOCIATION

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Three classes of membership: Active, Associated and Allied. ACTIVE MEMBERSHIP includes all firms engaged in any type of Pest Control operations (general extermination, fumigation, termite control, moth proofing) and dues are $10.00 per year. ASSOCIATE MEMBERSHIP includes branch offices of Active members and yearly dues are $7.50. ALLIED MEMBERSHIP includes manufacturers and supply houses.

STATEMENT

The National Association appreciates the co-operation given by way of publicity. The Association is not responsible for articles published unless credited to the Association. The list of officers and directors is published for informational purposes only.

For further details, communicate with

WILLIAM O. BUETTNER, Secretary
3019 Fort Hamilton Parkway Brooklyn, New York

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"Contributed articles in this publication do not necessarily reflect the opinions of the editors. The editors invite discussions, comments and all types of literary material pertaining to pest control and pests from any person interested in the advancement of the field."

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EDITORIAL

Purdue Conference

THE Third Annual Pest Control Operators Conference held at Purdue University was another one of those splendid and rare opportunities for the pest control industry.

The five day meeting recently held will go down in history as one of the finest conferences thus far held. The enthusiasm and spirit shown this year was far greater than last year, not that last year's course was not interesting, but this year more first hand information and facts were brought to our attention, making us realize more than ever that such a course is invaluable.

We are truly indebted to the Department of Entomology of Purdue University and the National Association in making this conference possible. The members of the National Association who attended this conference, are indeed very grateful to Purdue University and to its staff of splendid workers for the fine spirit of willingness and cooperation shown. It is this cooperation that will aid in the attainment of the ideals held for our industry.

Trip of Secretary National Pest Control Association

WILLIAM O. BUETTNER, Secretary of the National Pest Control Association is at present making his annual good-will tour from north to south and coast to coast. Unquestionably there will be a great deal of interest to report upon completion of the trip and it is expected that "PESTS" will carry a detailed story.

Last heard from, Mr. Buettner mentioned the conferences being held in the south, and from New Orleans comes word that the Southern Pest Control Operators Conference in its initial meeting had an enrollment of 84 at Louisiana State University at Baton Rouge. The brief note from "Bill" mentioned progress and plans for stop-overs at Dallas, Texas; Denver, Colo.; and meeting in California which would culminate in his attendance at the Pacific Coast Pest Control Operators Conference to take place at University of California at Berkeley, California, February 20-21-22, and then the Fifth Annual Convention of the California Pest Control Association at Berkeley, February 23 and 24.

Termite Contest

PEST Control Operators who attended the Purdue Conference will be interested in the outcome of the termite guessing contest. There were 35 contestants and their guesses of the number of termites in the two vials ranged from 1,340 to 10,310. There were 1,183 nymphs of first and second reproductives in vial "A," and 1,828 workers and indifferentiated nymphs in vial "B," making a total of 3,011 termites. The nearest guess was 3,663. The contest was won by Harlen B. Ives of Rose Exterminator Co., Detroit, Michigan.

Termites

THIS February issue of Pests is given over very largely to articles on termites. Swarming season is just around the corner and it is almost a safe prediction that there will be the usual flock of claims as to efficacious services various firms feel themselves in position to render. There will be the exaggerated claims by way of advertisements, high pressure sales' efforts, and what not. Would that the termite control operators realize that they and they alone are the losers in the long run when there is overdone the claims that so many times are obviously ridiculous.

Dr. Thos. E. Snyder in the January issue pointed out some rather basic truths in the answers that he gave during the "Question and Answer" period of the Sixth Annual Convention of the National Pest Control Association at Omaha, Nebraska, last October. In this issue we offer the very splendid address of Mr. George M. Hunt who has pointed out much to dispel some of the nonsensical claims made in connection with so-called impregnation and brushing treatments. The latter part of his address entitled "Methods of Applying Preservatives" might well be read and re-read several times. Mr. St. George of the Bureau of Entomology made interesting observations at the meetings that were held by the Eastern Branch of the American Association of Economic Entomologists at Baltimore. Walter B. Hill, chairman of the Termite Committee of the National Association, suggested a few rather pertinent remarks and suggestions in his report. **Pests** has purposely given considerable space to the subject of termite control because it is high time that we now follow-through with the debunking process that we started last year and which should be made at the beginning of a season rather than waiting for the end of a season again.

When all is brought to a few words, we should frankly admit that as far as termite control work is concerned for the average operator who largely provides termite control for structures already erected, there is the first and foremost need of reconstruction, replacement and repair work. As termite control operators we should train ourselves to be competent in our analysis of any job wherein exists termite infestations and then assume the proper role of supervision in connection with the reconstruction that has to be done. Reconstructions, replacements and repairs also entail the necessity of chemical treatments and these for the most part are confined to soil poisoning work. The ordinary carpenter is no competitor once we realize that no two jobs are exactly alike because only through experience of the men inspecting and treating the buildings can there be assured a measure of safety in making recommendations that will mean proper termite control.

Chemical treatment might be summarized as follows:

Where the feasible structural modification will not prevent termites from attacking the building effectively, toxic chemicals shall be applied to the soil along the foundation walls, piers, chimneys, bases of heating units, vertical piping, and such other points where termites might be likely to attain access to the building.

In cases of foundation walls, piers, and chimneys composed of masonry units where it is possible for termites to pass, an effective chemical barrier shall be forced into the void and, or, space between the masonry units.

In cases where the foundation walls, and, or, piers are of unusually bad condition, the termite control operator shall inject an effective toxic chemical between the top of the masonry and the wood member resting thereon.

Withal it must be recognized that careful service records have not been as fully established as they should be. Too many claims today are based on laboratory tests rather than being based on properties actually serviced.

Guarantees are nothing more than a maintenance service and let this service be a service rather than handing out slips of paper decorated with statements that are wrapped around a figure "Five" or even more or less, but state clearly what the customer is to expect from the termite control operator in terms of SERVICES rather than in terms of PROMISES. Any competent termite control operator has no worry about "Bonds" or "Insurance" if his standing in the given city where he operates is open to investigation.

It is expected that the National Better Business Bureau will issue what might be considered a **Third revised** edition of a "Termite Bulletin." Both of the bulletins issued thus far fall short of placing emphasis in the proper place when it comes to entomological requirements; that is, too much attention has been given to the treating of timbers in place and commercial phases of protection. The National Association Termite Committee is working on suggestions for the revamping of a bulletin which will be offered to the National Better Business Bureau for consideration.

We pledge ourselves to publish the type of articles that will be of direct assistance to the termite control operators.

Pest Control Publicity

WE FEEL that local associations might well take a leaf from the book of the Associated Exterminators and Fumigators of New York. In fact, what holds for local associations might well be carried over by individual firms in the smaller cities as well as groups of firms which may not even be organized into local associations.

Newspapers, as a rule, are always interested in "human interest" stories and if the individual firms will only forget themselves and leave their names out of the picture, it is quite possible that some of the unusual incidents of our daily pest control operations will make for good "news copy." Why not try this?

We quote verbatim a recent letter that was sent to the membership of the Associated Exterminators and Fumigators of New York:

"For some time we have been giving consideration to the thought that we are woefully lax in our program of publicity. We are of the firm conviction that as an Association we should be able to develop the type of human interest material that might be used by the daily newspapers in the five boroughs. We feel that if something can be done along these lines, our members will secure considerable benefit by building up in the public mind the need of using the services of Pest Control Operators.

"The following will give you an idea as to the kind of material we would like to have:

"1. The Borough President of Bronx sometime back wrote in a somewhat facetious vein, a letter to some official and brought into play the number of roaches, etc. That was something that could have been played up by way of rebuttal and yet one of our members was the one person who saw the possibilities and took advantage of it.

"2. Termites are an interesting subject. The October 17th item in the Herald Tribune carried some thoughts that were wrong. Here is something that could be turned into Association publicity. Then there is the story about the termites causing a fire. True, the termites did not actually cause the fire but there are possibilities of working into a picture the thought that termites might contribute to a possible fire. It is not a case of playing up the 'scare' element but just an interesting comment.

"3. Take, for example, the story that can be woven around the idea of Pest Control instead of using 'exterminators' and 'fumigators.' For example, a service operator who was commonly thought of as a 'bug chaser' or an 'exterminator' now looks at himself as a 'P.C.O.' The public ought to know that a P.C.O. means Pest Control Operator.

"Therefore, if you send us some of your ideas, we can all capitalize on them through Association publicity in the five boroughs.

"It is our intention to send a weekly bulletin out to all publications as well as a bulletin to all of our members on publicity matters. Let's start the New Year right by putting this worthy activity into motion immediately."

List of Firms Who Handle Moving Picture Films of Insects

1. Bell and Howell Company, 1801 Larchmont Ave., Chicago, Illinois. Catalog Price 25c. This company has sound film 16mm. on various topics for rent. They also have some free sound films. Also silent 16 and 8mm. films.

2. Eastman Kodak Company, Teaching Films Division, Rochester, N. Y. Send for descriptive list of Eastman classroom films.

3. Erpi Classroom Films, Inc., 35-11 Thirty-fifth Ave., Long Island City, N. Y. Send for Instructional Film Catalog. An excellent source.

4. Motion Pictures of the U. S. Dept. of Agriculture, Miscellaneous Publication No. 288, Division of Motion Pictures, Extension Service, U. S. Dept. of Agriculture, Washington, D. C. There is no rental charges for films but borrowers are required to pay for transportation from and to the shipping point. You can buy these films also. 35 or 16mm. sound or silent films.

5. Society for Visual Education, Inc., 327 S. LaSalle St., Chicago, Illinois. This company has 16mm. films available on a rental basis. 16 and 35 mm. films may be purchased. The rental charge is 50c per day plus transportation charges.

Several state universities have excellent film service, notably Wisconsin, Ohio, Iowa, and Indiana.

Second Pacific Coast Pest Control Operators Conference

University of California, Berkeley, California

February 20-21-22, 1939

THROUGH the splendid cooperation of the University of California at Berkeley, the Second Annual Pacific Coast Pest Control Operator's Conference is to be held on the university campus February 20-21-22. Prof. William B. Herms, head of the department of entomology, as dean of the conference has arranged a splendid program. This conference is sponsored by the California Pest Control Association, Inc., with the cooperation of the National Pest Control Association.

Similar successful conferences have recently been held at Purdue University, Lafayette, Indiana, which attracted 117 at the third annual conference, and the first conference at Louisiana State University with an attendance of 84. Outstanding entomologists, members of university faculties as well as governmental officials took a prominent part in the educational advantages provided through these conferences. The second Pacific coast conference to be held at Berkeley is a continuation of the splendid conference held at Stanford University at Palo Alto last year when 78 took advantage of the opportunity.

This year's conference again is open to all pest control operators throughout the west regardless of any association membership in that the primary purpose is that of providing a program that will benefit the entire industry. Information gained at such conferences cannot help but make for better pest control operators. Recent information tells of pest control operators planning to attend from Colorado, Utah, Washington, Arizona, Honolulu, Hawaii, with Indiana represented by Prof. J. J. Davis and New York by William O. Buettner. Both Prof. Davis and William O. Buettner will bring with them messages and work accomplished at Purdue and Louisiana state conferences.

No pest control operator can afford to remain away. The only investment is that of $10.00 registration fee which includes banquet and entertainment. Make reservations through R. V. Haneberg, 885 59th St., Oakland, California, to be assured of a copy of the outline that has been carefully prepared. The slogan tells the story—"March Abreast of the Best and Ahead of the Rest"—keeping pace with modern pest control technique. Say it in any language one desires but it amounts to one and the same conclusion; namely, to stay away is costly; to attend is the one investment that pays dividends.

The program speaks for itself:

Conference headquarters at Durant Hotel.

Conference slogan: "March Abreast of the Best and Ahead of the Rest."

PROGRAM

All conference lectures and laboratory classes will be held on the university campus.

Sunday (February 19, 1939)

Registration at Durant Hotel. 4:00-10:00 p. m.

Monday (February 20), 8:00-8:45 a. m.

Registration at Hotel Durant.

Monday (9:00-12:00 a. m.), Eshelman Hall

The Second Annual Conference's Objectives, Prof. Wm. B. Herms.

Problems Facing Pest Control Operators, Prof. J. J. Davis.

The Pest Control Operators Conferences, a National Institution, Wm. O. Buettner.

"The Importance of Positive Identification," Dr. E. G. Linsley.

"Knowledge of Ecology Important in Pest Control Operations," Dr. M. A. Stewart.

Monday (1:30-4:30 p. m.), Agriculture Hall
(University Campus)

Address of Welcome, by Dr. S. B. Freeborn, Assistant Dean, College of Agriculture.

"What the Pest Control Operator Should Know About Chemistry," Dr. W. M. Hoskins.

Laboratory Sectional Meetings, Prof. Wm. B. Herms and Staff.

Monday at 7:30 p. m.,
113 Agricultural Hall

Illustrated Lecture on Ants, Dr. J. E. Eckert.

Tuesday (February 21), 9:00-12:00 a. m.
Agriculture Hall

"Termites—How They Live," Dr. S. F. Light.

"Other Wood-boring Insects and Stored Grain Pests," Dr. E. G. Linsley.

"Insects of the Household and Door-yard," A. E. Michelbacher.

Conference Photograph—location to be announced.

Tuesday, 1:30-4:30 p. m., Agriculture Hall

"Fumigation," Dr. D. B. Mackie.

"Newer Developments in Insect Toxicology," Dr. W. M. Hoskins.

"Discussion of Dr. Hoskins' Paper," Dr. Alvin J. Cox.

Laboratory Sectional Meetings, Prof. W. B. Herms and Staff.

Tuesday at 7:30 p. m., 113 Agriculture Hall

Prof. J. J. Davis presiding

Illustrated Lecture, "Insects and Public Health," Prof. W. B. Herms.

Wednesday (February 22), 9:00-12:00 a. m.
Agriculture Hall

"Rodents, Particularly Rats and Mice," Dr. T. I. Storer.

"Fleas, Biological Studies, Control," Dr. M. A. Stewart.

"The Termite Control Operator," John L. Farley.

Wednesday, 1:30-4:30 p. m.,
Agriculture Hall

"The State Structural Pest Control Act at Work," Wilbur F. Smith.

"Building Out Termites, Building Codes, Methods," A. L. Brinckman.

Laboratory Sectional Meetings, Prof. Wm. B. Herms and Staff.

Wednesday at 6:30 p. m.

Conference Banquet on Treasure Island (see registrar for transportation).

Fifth Annual Meeting (Convention) of the California Pest Control Association, Inc.

Lake Merritt Hotel, Oakland, California

February 23 and 24, 1939

A CONVENTION **without speeches** is planned this year. That of itself is something of a novelty. Since it was possible to have the convention and conference in the same area, and since the conference has such a wealth of excellent speakers and other features, the committee has decided upon an annual meeting of, by, and for pest control operators. The plan calls for a series of clinics which will allow for ample discussion of pests and pest problems in addition to the business sessions concerned with industry problems.

Thursday, February 23, 1939

9:00—Discussion of general plan of procedure.
9:30—Fumigation.
10:30—Rats and Mice.
12:00—Recess.
1:30—Ants, Bees and Wasps.
2:00—Termites, Fungi and Beetles.
5:30—Recess for dinner.
Evening—Held open for conferences.

Friday, February 24, 1939

8:30—Roaches and Silverfish.
9:00—Moths and Carpet Beetles.
9:45—Fleas, Ticks, Bedbugs, Spiders, Mites, Lice, Psocids.
10:30—Business Practices, Advertising, etc.
12:30—Recess for Lunch.
2:00—Annual Business Meeting.
6:30—Banquet in Venetian Terrace Room of the Lake Merritt Hotel (with dancing and other entertainment starting at 8:00).

Saturday, February 25, 1939

Trip to the Golden Gate International Exposition on Treasure Island.

A special day has been set apart for the exposition to be known as "Pest Control Operators' Day."

Definite and tangible progress is proposed through this year's clinics. Each group of pests and its control measures are being described by committees now at work. The reports of these committees are to be dis-

tributed at the meetings for discussion and for approval or disapproval item by item.

Agreement on many points regarding approved control measures for each type of pest, and of business practices will have been reached at the conclusion of the meetings. For the first time in the history of the industry a basis of standards of workmanship and business methods will have been provided through the cooperation and experience of men engaged in the industry. Each future meeting can revise and improve these basic standards.

The Pacific Coast Building Officials Conference faced a similar problem several years ago. Each city had its building laws. Each was the product of local talent to a considerable extent. Through the building officials' organization a uniform code was worked out. No city is obliged to adopt it, but its rapid acceptance is evidence of the widespread approval of the method. The code is being revised and improved continually.

Every industry worthy of the name has some basis of grading its product or service, whether it be the manufacture of wine, the dispensing of gasoline, or the trimming of fingernails. It is conceded that the industry which can regulate itself is much better off than that which must be governed entirely by law.

Costs

The cost of registration this year will be only slightly more than the cost of the banquet, probably either $1.50 or $2.00. This has been made possible by the excellent cooperation of the Oakland Chamber of Commerce which seems determined to show the visitors a good time and is rendering various services toward that end. Rooms at the Lake Merritt Hotel are from $3.00 up and at the nearby Lakehurst Hotel $2.00 and $2.50.

The convention will be limited to members of the California Pest Control Association. Robert E. Hackley, 807 Waverly St., Palo Alto, California, will gladly provide additional information.

"Sympathy is always in season."

P.C.O.'s Hold Third Annual Conference at Purdue

THE THIRD Annual Pest Control Operators' Conference at Purdue University, with the cooperation of the National Pest Control Association was held January 16-20, at Lafayette, Indiana. Twenty states and Canada were represented in the registration of 117.

This five day intensive educational conference, sponsored for the third consecutive year by Purdue University, included some review work but was largely material additional to that offered in previous conferences. Similarly, many of those on the program have been in previous conference programs but many new authorities discussed major pest control problems. Aside from the new material added to the program, outstanding features were the use of the demonstration method in presenting discussions, such as building construction in relation to rodent and insect infestations, and methods of mixing insecticides and rodent baits.

As in previous years, Prof. J. J. Davis was director of the conference, assisted by the following of the Purdue University: Drs. H. O. Deay, B. E. Montgomery, F. J. Allen, Prof. A. H. Carter, G. E. Gould and G. E. Lehker. Those outside the Purdue faculty who participated on the program included the following: F. E. Garlough and G. C. Oderkirk of the U. S. Biological Survey, Drs. T. E. Snyder and E. A. Back of the U. S. Bureau of Entomology and Plant Quarantine, W. H. Tomlinson of the U. S. Bureau of Mines, W. E. McCauley of the University of Illinois, Dr. F. L. Campbell of Ohio State University. The industry was represented in the conference program by E. F. Sennewald of St. Louis, Walter McCloud of Chicago, Charles Denny of St. Louis, Geo. L. Hockenyos of Springfield, Illinois, H. E. Jennings of Chicago, W. B. Hill of Memphis, Wm. O. Buettner of Brooklyn, R. M. Adams of Cincinnati, D. H. Lewis of Buffalo, V. H. Sturgeon of Louisville and R. C. Yeager of Cincinnati. The manufacturers were represented by J. L. Horsfall of the American Cyanamid and Chemical Corporation, I. L. Ressler of the E. I. du Pont de Nemours Company, Dr. Carl of Allaire, Woodward & Co., and Dr. H. E. Whitmire of the Whitmire Research Corporation.

The conference was opened by Prof. J. J. Davis who expressed his sincere appreciation to the National Pest Control Association, the Federal Bureau of Entomology and Plant Quarantine, Biological Survey, and Bureau of Mines; also to entomologists from neighboring states, manufacturers and commercial operators who cooperated and made possible the success of this third conference.

On behalf of the university, Acting Dean Freeman expressed his pleasure in having our industry once more at Purdue and assured us of continued interest in such conferences. Said he, "This is a pleasant recollection that should make pleasant experience, an opportunity to learn from experience, and in the exchange of ideas." Again he said, "Your industry gives confidence in the future and you should not look back in history but think of today with its great possibilities before you."

We heartily agree with Dean Freeman that the great possibilities before our industry are better today than ever, especially between the pest control operators and the entomologists who welcome our cooperation in developing higher standards, better methods and service to the public. Unfortunately

(Continued on Page 8)

Part of the Group Who Attended the Third Annual P.C.O. Conference at Purdue University, Jan. 16-20, 1939

comparatively few pest control operators realize the vital importance and value of these conferences until he attends, learns to understand the usefulness of fundamentals and clinics and utilizes the information thus attained.

Besides the daily sessions provided two nights were devoted to moving pictures of problems of interest to pest control operators and a night to a discussion of construction problems as they relate to the prevention and control of pests. As usual Thursday night was devoted to the annual dinner. President Edward C. Elliott, who had not returned from an important commission in the Phillipines, was represented by Prof. F. C. Hockema, assistant to the president, who presided at the dinner as toastmaster. Prof. A. H. Monroe, of the speech department of Purdue University, gave an inspiring talk on the development of confidence in the work of P. C. O.'s. Appropriate gifts were presented to Professor Davis, Doctor Deay, Doctor Montgomery, Mr. Gould and Mr. Lehker, of the Purdue entomology staff.

It is interesting to note the progress of these conferences, which originated at Purdue University in January, 1937. Ordinarally we think of progress in decades rather than years. But here we may note progress from year to year. In January, 1937, the first conference was held at Purdue University. As Professor Davis has often said, there was nothing to act as a criterion for the first conference. With less than two months to develop a program, one was provided with appropriate outlines. This first conference program and outlines proved so useful that they have been the basis of future conferences at Purdue as well as on the west coast and in the south.

The first set of outlines included 30 pages, 67 persons from 14 states registering at this conference. The folder of outlines for the second conference included 57 typewritten pages and 103 persons from 22 states and Canada registered. The last conference (January, 1939) had 117 persons registered from 20 states and Canada and the folder of outlines included 74 pages.

It is also interesting to note that many attending the conference were there at previous conferences. In fact, nearly half of those who registered had attended the first and second conferences. The figures show that 61 of the 117 were attending for the first time, 33 were there for the second time and 23 were there for the third time.

The third conference was a huge success from all viewpoints—the attendance was fine, the program was essentially new and a repetition of previous conferences and the speakers included as great talent as was available in the world.

Inaugurate P.C.O. Conference in South

UNDER the directorship of Prof. O. W. Rosenall, entomologist of Louisiana State University, the latter institution sponsored the first pest control operators conference for members of this industry in the southern states at Baton Rouge, Louisiana, January 30, 31 and February 1. The conference was conducted with the cooperation of the National Pest Control Association and the pest control operators of the southern states.

Eighty-four persons registered and the day session was so completely worthwhile that those in attendance have requested that it be repeated a year hence and made an annual event.

A folder of outlines, similar to the discussion outlines provided at conferences held at previous conference at other institutions, was provided. The speakers included, in addition to Professor Rosenall, the following from Louisiana State University: Dr. Wm. H. Gates, head of the department of entomology and zoology; Dr. C. O. Eddy, head of the entomology department of the experiment station; Dr. J. H. Roberts, Professor E. A. Fieger, C. L. Stracener, George Lowery, W. Whitcomb, Jr., and B. A. Osterberger. Out of state speakers included Dr. R. T. Cotton, T. E. Snyder, M. B. Christian and C. E. Smith of the Federal Bureau of Entomology; Prof. J. J. Davis of Purdue University, and Wm. O. Buettner, secretary of the National Pest Control Association. In addition speakers included W. E. Anderson, State Entomologist of Louisiana, L. S. Bridges of Baton Rouge and E. R. Barber of New Orleans, representing the commercial operators, and G. H. Chapman of the American Cyanamid and Chemical Corporation.

The dinner Tuesday evening was held in the dining room of the state capitol, through the courtesy of W. E. Anderson. A wonderful southern dinner was followed by several short talks, Mr. Anderson acting as toastmaster. In appreciation of their fine cooperation, gifts were presented to Mr. Anderson and Dr. Rosenall.

A business meeting was held just prior to adjournment with Ernest R. Barber of New Orleans acting as chairman. At this session it was the unanimous opinion of the group that the conference had been one of great importance to the operators of the south and that the Louisiana State University authorities be requested to continue it as an annual event. A committee of two was appointed to arrange for a meeting of Louisiana pest control operators within the next six weeks to consider state organization plans. The committee includes Joe Mandelbaum and L. A. Bridges. The chairman was also directed to appoint a committee of three to confer with the Louisiana Agricultural Experiment Station for the purpose of considering research in cooperation with pest control operators.

Pest Control Operators' Conference

By F. C. HOCKEMA

EDITOR'S NOTE: *This short article was given at the banquet by F. C. Hockema, at Purdue University Conference.*

Pest control operators might well be classified as follows:

1. **Abolitionists** of the army of adventurous, annoying **ants.**

2. **Buccaneers** who baffle the barbarous **bedbugs** and bewilder the brazen, Bolshevik **beetles,** and whose battles benefit the books, the birds, and the beasts.

3. **Captains** of the companies cooperating in cooking up ideas for crushing the **cockroach,** the **cornborer,** and the **chinchbug.**

4. **Foremen** in the front ranks of the fearless fighters and fumigators making the **flies** flee and the **fleas** fly.

5. **Governors** using great guns in getting back ground grasped by the **grasshoppers.**

6. **Lieutenants** legislating against **lice** which literally make lunatics of luxurious ladies.

7. **Mixers** of masses and materials making misery for the molesting **mouse** and the musty **mole.**

8. **Musketeers** manufacturing many methods of misery for the menacing **moth** and the milling **mosquito.**

9. **Pioneers** in putting poison in the plates of **pests.**

10. **Pilgrims** in the process of pickling **parasites** in order to preserve paragons of the **pests** of the past.

11. **Rebels** revolutionizing the reign of the ravaging **rat.**

12. **Soldiers** spending their strength in the struggle to slay the sly, stinging **spider.**

13. **Troopers** trained to terminate the troublesome, terrible, and terrifying **termite.**

14. **Wielders** of the weighty weapons of war against the **weevil** and the worm, which lay waste to widespread wealth.

15. **Honored hosts** of the honest hordes of people who, after being hooked by high-handed **humbugs,** seek sound advice from the pest control operators.

Planning for the Big Seventh Annual Convention of National Pest Control Association to be held at Hotel Pennsylvania, New York City, October 23, 24, 25, 1939. Mr. Rene Levy, one of the original proteges of the famous "Oscar of the Waldorf" is going over booth exhibits and entertainment matters with (left to right) "Bill" Buettner, "Bill" Shrimplin, local chairman, and President Irving Sameth.

Inquisitive Mice Cause Trouble

Florence, N. J.—Two inquisitive mice chewed a box of matches at William Brining's home with dire results.

The matches fired Brining's hunting coat. The flames set off a box of shotgun shells in a pocket and the pellets scattered through the house.

Brining and his family jumped from bed.

On the floor below the burning coat they found the riddled bodies of the mice.

Wood Preservatives and Their Application

By GEORGE M. HUNT, *Forest Products Laboratory, United States Department of Agriculture*

EDITOR'S NOTE: *Mr. Hunt is associated with the U. S. Department of Agriculture, Forest Service, Forest Products Laboratory. The Forest Products Laboratory is maintained at Madison, Wis., in cooperation with the University of Wisconsin. The following remarks were in substance the address delivered by Mr. Hunt at the Sixth Annual Convention of the National Pest Control Association held last October at Omaha, Nebraska.*

WOOD, like any other structural material, is exposed in service to various types of deterioration, depending upon the conditions under which it is used. It's satisfactory performance, therefore, often requires protective treatment to prevent such deterioration. Decay is by far the greatest destroyer of wood, but insects and fire also account for a large amount of damage annually. Termites alone, for example, are said to do as much as 40 million dollars damage annually, much of which is in the destruction of wood and wood products. Other important wood destroyers, which together account for a large volume of wood each year, are marine borers, mechanical wear and breakage, weathering, and chemical corrosion. Treatment of wood with suitable materials has a place of more or less importance in providing protection from all these destroyers but it is of especial value in protecting from fungi and insects and it is to that phase of wood protection that the present paper applies.

Requirements of a Good Preservative

Wood preservatives may be defined as chemicals that, when injected into wood, make it unpalatable to wood destroying organisms or uninhabitable by them. In order to be generally useful, a wood preservative must (a) be toxic to the organisms that injure or destroy wood, (b) have suitable permanence, (c) have satisfactory penetrating properties, (d) be safe to handle and use, (e) be harmless to wood and metal, and (f) be inexpensive and plentiful. For the treatment of certain special products, such as millwork or manufactured articles, it may also be required that the preservative be paintable, odorless, colorless, fire resistant, moisture repelling, or non-swelling, or that it have combinations of several of these or other properties. The relative importance of the different requirements depends upon the character of the product treated, the purpose for which it is to be used, and the conditions of service.

Toxicity is required in all wood preservatives, in order to make the wood poisonous to the various organisms that cause the damage. It seems possible for preservatives to be repellent toward some insects without being toxic but for general effectiveness, and especially for protection against fungi, toxicity is necessary. It is not infrequently claimed that decay prevention is accomplished by "waterproofing" the wood but this is incorrect for no "waterproofing" material or treatment yet discovered, that is practical for common use, does more than retard the rate of water absorption. A possible exception is the impregnation of wood with synthetic resin-forming materials which, as yet, are not cheap enough for common use. Under continued exposure to dampness, the wood can usually absorb enough water in a few weeks or months, even through the best of "waterproofing" treatments, to permit its decay. This is one of the reasons why paint does not prevent decay.

Since treated wood must last many years in order to give satisfactory service, it is apparent that a preservative must have a considerable degree of permanence. No preservative is acceptable that evaporates readily or that otherwise disappears in a short time from the wood or changes chemically into compounds that are ineffective. Benzol and turpentine are examples of chemicals that are toxic but that exaporate from the wood too quickly to give the desired protection. Complete resistance to evaporation, leaching, or chemical change is not required but the rate at which the preservative becomes ineffective must be so slow that adequate protection is afforded over a sufficient period of time.

(Continued on Page 10)

A RATICIDE FOR SURE-KILL RAT EXTERMINATION

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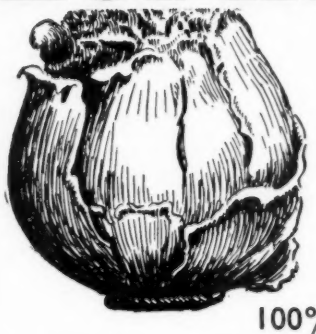

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A preservative should not be dangerous to handle nor make the treated wood hazardous to the health of the men who must prepare it or build with it. It must not endanger persons or animals who may later come into contact with the treated wood or occupy structures containing it. Any preservative, if taken internally in sufficient quantity would probably cause death, but that is true of most of the chemicals in daily domestic or industrial use and is not a valid objection. Any special hazard, however, such as explosiveness, high fire danger, extreme poisoning hazard, or tendency to produce occupational disease, may prevent the commercial use of an otherwise suitable material.

Preservatives must penetrate wood satisfactorily in order to be acceptable. It is not reasonable to expect deep penetration by mere brushing, or brief immersion, although that would be highly desirable, if obtainable. Good penetration by such methods is not infrequently claimed for new preservatives but, so far as is known, it has not been successfully attained. New preservatives, however, should penetrate as satisfactorily as those in common use, when applied by pressure or by other suitable methods. The protective zone must be deep enough so that it is not easily broken through in handling or by the ordinary wear and season checking to which wood is normally exposed in service.

Preservatives that attack wood and seriously reduce its strength are obviously unsuitable for prolonging its life. Corrosiveness to metal is also undesirable for corrosive preservatives damage the treating apparatus as well as the bolts, nails and other metal with which the treated wood must be in contact when in use.

Low cost and a plentiful supply are important requirements in a new preservative unless it is so outstanding in other respects that its cost becomes of secondary importance. The value of the product being treated, the service life desired, and competition with other materials largely determine the permissible cost. The commonly used preservatives are low in price, when purchased in large quantities, and are not likely to be supplanted by new materials that markedly increase the cost of treatment. The wholesale prices of coal tar creosote, for example, are commonly in the range of 12 to 16 cents per gallon; zinc chloride sells for about 3½ to 5 cents per pound in large lots and even some of the special preservatives used for the treatment of window sash can be obtained for 25 cents per gallon or less. Retail prices are necessarily much higher because of the greater cost of packaging, selling, and distributing.

Color, odor, and painting properties are usually not important considerations in the treatment of railway ties, piling, fence posts and many other forms of timber that are to be used out of doors or in contact with the ground. In residences and other buildings, however, it is usually desirable that the preservative leave the wood just as free as possible from color and odor and as suitable as untreated wood for all types of stains, paints, varnishes, and other finishes.

It is seldom demanded that a preservative make the wood highly resistant to fire, although this would often be of great advantage. It is a definite disadvantage, however, if the preservative increases the flammability of wood used in buildings or other structures where fire hazard is of importance.

A preservative that would prevent moisture changes in wood in service and thus prevent shrinking and swelling, would be advantageous in many uses of wood. Since it is a requirement that cannot be met by the preservatives now in use, it is not demanded in new preservatives for general use. If such a preservative ever is developed it will undoubtedly find fields of usefulness not now met by any preservative.

A special requirement in the treatment of manufactured articles, such as furniture, millwork, store and office fixtures, and similar products, is that the preservative, when injected shall not swell the wood, for swelling causes grain raising, distortion of surfaces, and severe stresses in the joints. The shrinkage that takes place during the seasoning of wood swelled in treatment leaves open joints and warped, roughened surfaces. For these reasons, water-borne preservatives are seldom used in the treatment of furniture and millwork and toxicants carried in organic, non-swelling solvents are preferred.

Testing Wood Preservatives

For many industrial products in common use there are laboratory tests by which the utility of the material can be determined quickly and by which accurate comparisons can be made between competitive products in a short time. With such materials, it is possible to obtain an immediate and dependable evaluation of a new product that is offered in competition with older materials. This fact naturally leads to the common belief that the effectiveness of wood preservatives can also be determined quickly by simple laboratory tests. Unfortunately this is not correct for there are no short-time laboratory tests by which the relative effectiveness of different wood preservatives can be compared with assurance that similar results will be obtained from treated wood in actual service.

Much useful information can, of course, be obtained through laboratory testing methods on toxicity, penetrating properties, corrosiveness to wood and metal, painting properties, color, odor, fire resistance, fire and explosion hazard, water repellence, and swelling. Laboratory tests also give information on various factors that affect permanence, such as volatility, leachability, and chemical stability, but not enough to obviate the necessity of service tests on materials of promising character[1]. Laboratory tests frequently will show that the new material offered as a preservative is not worth testing further. When thorough laboratory tests give favorable results, a preservative can be considered promising but it is not safe to conclude that equally favorable results will be obtained in service. It it necessary to observe the performance of a preservative over a period of years in actual use before it can be reliably evaluated or compared with other preservatives. Even then, the results may be misleading unless a large volume of timber under different use conditions is considered.

Observations must be made on many different installations under various conditions of service because the service life secured by the use of any preservative or process will vary as these factors vary. A few early failures of treated wood in service do not necessarily mean that the preservative or process is ineffective. The preservative may have been applied improperly or in inadequate quantity, or the conditions of service may have been abnormally severe. On the other hand, successful performance for a few years, or in a few cases, is not adequate evidence of high effectiveness. The results from a large number of installations must be considered together before the true picture is obtained.

The great disadvantage of waiting for the results of service tests is the very long time usually required for their completion. It is especially discouraging to the promoters of new preservatives, for a long period of pioneering effort is necessary and, with patented materials, the major portion of the life of the patent will have passed before the preservative is conclusively evaluated. Nevertheless, there is as yet no short cut by which the necessity for service records can be avoided.

The Principal Wood Preservatives[2]

There are many materials that are capable of extending the life of wood. Naturally some are more effective than others; all possess certain disadvantages that limit their use, as well as advantages that make them especially suitable for certain purposes. With few if any exceptions, these preservatives fall into three general classes; the toxic oils, like creosote, which are relatively insoluble in water and of low volatility; the salts that are injected into wood in the form of water solutions; and preservatives that consist of a small percentage (usually about 5 per cent) of a highly toxic chemical in a solvent or mixture of solvents other than water.

Coal-tar creosote is the most important and most generally useful wood preservative. Its advantages are (1) its high toxicity, which makes it extremely poisonous to wood-destroying organisms, (2) its relative insolubility in water and its low volatility, which impart to it a great degree of permanence under the most varied use conditions, (3) its ease of application, (4) the ease with which its depth of penetration can be determined, and (5) its general availability and relatively low cost (when purchased in wholesale quantities).

Although for general outdoor service in structural timbers there is, as yet, no better preservative than coal-tar creosote, for some special purposes it has certain properties that are a disadvantage. The odor of creosoted wood is unpleasant to some persons and may be considered objectionable in dwellings. Foodstuffs that are sensitive to odors should not be stored near creosoted wood. Workmen sometimes object to the use of creosoted wood because it soils their clothes and because it burns the skin of the face and hands of some individuals, causing an injury similar to sunburn. There need be no fear, however, that creosoted timber has a serious effect on the health of workmen handling or working near it, or on the health of the occupants of buildings in which creosote-treated materials has been used. The color of creosote and the fact that it usually cannot be painted over satisfactorily make it unsuitable for finish lumber or other material where appearance and paint receptivity are of major importance.

Carbolineums or anthracene oils are coal-tar distillates of higher specific gravity and higher boiling range than ordinary coal-tar creosotes, but their general properties and preservative effectiveness are similar to those of coal-tar creosote. They are usually sold under proprietary or trade names.

Zinc chloride is the water-soluble wood preservative that has been most extensively used in the United States. The principal advantages of this salt are relative cheapness, general availability, uniformity of quality, cleanliness, lack of odor, ease of shipment, and lack of fire hazard. Its chief disadvan-

[1] A discussion of the various methods employed in testing wood preservatives can be obtained from the Forest Products Laboratory upon request.

[2] A more comprehensive discussion of wood preservatives may be obtained from the Forest Products Laboratory upon request.

tage is its tendency to leach out of wood that is in contact with water or soil. The water that is injected with the zinc chloride temporarily adds considerably to the weight of the wood and, in order to avoid shrinkage troubles, must be dried out before the wood is used in buildings.

Zinc chloride treated wood, properly dried after treatment, finds extensive use in the construction of buildings, especially in the roof planking of factory buildings where high relative humidity favors the rapid decay of the roofs. It is also very useful for the woodwork of dwellings, when not used in direct contact with the ground. The facts that the net weight of the wood (after seasoning) is not greatly increased by the treatment and the treated wood is clean and paintable favor its use in such places.

Chromated zinc chloride contains approximately 18½ per cent sodium dichromate and the remainder is zinc chloride conforming to American Wood Preservers' Association specifications. This preservative is extensively employed in place of zinc chloride. Reports of laboratory and field tests indicate that chromated zinc chloride is superior to zinc chloride, but it has not been in use long enough to have established by actual service records how it compares in effectiveness with zinc chloride or other preservatives.

Sodium fluoride (in mixture with other materials) has been used to a considerable extent in Europe for preserving wood, especially mine timbers. In the United States it has been used alone experimentally in railway ties and in mine ties and timbers and has also been used to some extent commercially in the treatment of factory roof timbers. The evidence thus far available indicates that it is a good wood preservative. It is not so soluble as zinc chloride, since the maximum strength of solution is about 4 per cent. The chief disadvantage of sodium fluoride is its relatively high price, which in recent years has been roughly one and one-half times that of zinc chloride, without any compensating advantage over zinc chloride. Sodium fluoride is an important ingredient in several proprietary or patented preservatives, some of which are finding considerable use in the treatment of building lumber and structural timber.

Clean non-swelling preservatives. A group of preservatives has been developed in recent years to meet the need for a treatment that will not swell the wood or require long drying and will leave the wood clean, paintable, and odorless. These preservatives are being used to a considerable extent for the treatment of window sash and frames, but they may also be used for the treatment of doors, flooring, furniture, millwork, and similar products. Ordinarily they are applied by immersion.

Acceptable preservatives of this type contain not less than 5 per cent by weight of a good toxic chemical. Pentachlorphenol, tetrachlorphenol, and 2-chlororthophenylphenol are now most commonly used for the purpose because of their cheapness and high toxicity. Beta naphthol and alphanitronaphthalene are also employed to some extent and other toxicants will no doubt come into use. The remainder of the preservative, in some formulas, consists mainly of volatile solvents, such as solvent naphtha, in other formulas it is chiefly a petroleum oil of domestic fuel oil grade, and in others it may be a mixture of volatile and nonvolatile oils of various kinds.

These preservatives have good toxicity and are very promising for the treatment of window sash and other millwork, but they have not yet been in use long enough to show by actual experience how effective or dependable they are in different uses. They may prove in time to be advantageous for termite control.

Proprietary preservatives. Many preservatives are sold under trade names of various kinds. Some of them are ordinary coal-tar creosote or coal-tar creosote that has been modified slightly by taking out some of the solid ingredients. Others, including the carbolineums, have had the lighter fractions removed, making them higher boiling than the ordinary run of creosotes. In the main, preservatives thus derived from coal-tar creosote are good preservatives and may be used with assurance. Whether it is economical to use them depends upon their convenience and their cost as compared with coal-tar creosote or zinc chloride.

Other proprietary preservatives contain wood-tar products or other oils. Their value is not so well established, but no doubt some of them have merit.

In a third group are preservatives injected in water solutions. Whether or not these are good depends upon the material of which they are composed. A few, containing arsenic, sodium fluoride, copper, or chromium, appear to be giving promising results.[3] Included in this group are Celcure,

[3] Brief mimeographed statements about some of the more prominent proprietary preservatives of this group can be obtained from the Forest Products Laboratory.

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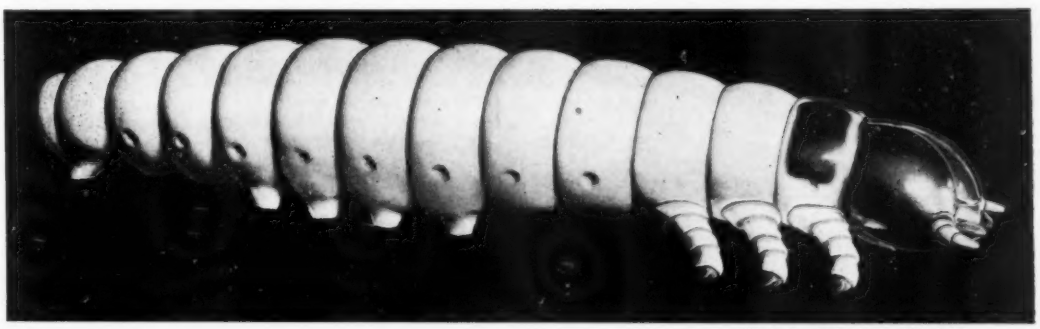

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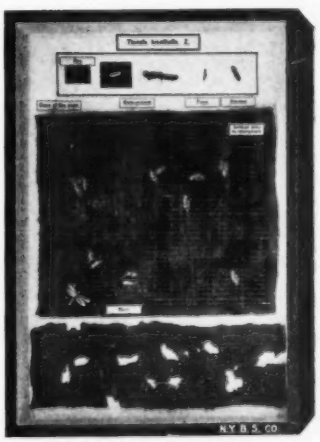

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Wolman salts, zinc meta arsenite and a few others that have thus far been less extensively used in this country. Before buying a preservative of this kind the purchaser should insist upon knowing its ingredients and their proportions; investing money in secret preservatives is usually unnecessary and generally unwise.

In a fourth group are various proprietary preservatives of the clean, non-swelling type. Some, whose composition is disclosed, are of promising character.

The literature advertising some of the proprietary preservatives not infrequently contains extravagant claims as to their properties and their effectiveness. Obviously such claims should be greatly discounted. There are very few, if any, proprietary preservatives for general use, regardless of price, that have yet shown themselves to be better or more generally satisfactory than straight coal-tar creosote or zinc chloride in their respective classes.

Paints, varnishes, enamels, and similar coatings commonly used for interior and exterior decoration do not effectively protect wood against decay, marine borers, or most insects and would not need mention here except for the fact that there is a rather common belief that they have value as preservatives. These materials, as a rule, are nontoxic. Furthermore, they are almost invariably applied to only the faces or the faces and edges of the boards to be protected, leaving the hidden parts uncoated. Decay fungi, termites, and other destroyers ordinarily attack the hidden surfaces first and are not deterred by any coatings applied to exposed surfaces. When conditions are favorable for their growth, fungi readily penetrate through paint films.

Preservatives Compared with Fumigants and Soil Poisons

Good wood preservatives are not necessarily good soil poisons for termite control or effective materials for the treatment of insect infested wood and the reverse is also true. There are some materials that are probably fairly effective in all three uses but many are not. Since the Forest Products Laboratory has made no study of fumigants or soil poisons, perhaps I am venturing too much in discussing them. It appears to me, however, that for both soil poisoning and treatment of infested wood, an appreciable portion of the treating material should volatilize readily and produce a toxic gas that penetrates rapidly through wood and soil and kills the insects. High volatility, however, is opposed to permanence so that a material, such as orthodichlorbenzene, may be an excellent exterminator but of no value for preventing reinfestation. Such a material may be entirely satisfactory for killing powder post beetles in the wood work of a house but not for continuous protection against decay and insects.

In soil poisons, it would seem that there should be ingredients that have volatility for quick killing of termites and also ingredients that have permanence to prevent reattack from a new source, or by the survivors of the old nest who were fortunate enough to be beyond the reach of the fumigant. The permanent portions of soil poisons, especially if applied by trenching, may be in either solid or liquid form and are not required to be highly penetrative.

In ordinary wood preservatives for continuous protection of wood in service, the important requirements are toxicity, permanence, and penetrativeness. There is no need for a volatile toxic constituent; in fact, volatility or any other property that reduces the amount of toxic material remaining in the wood, is disadvantageous.

Methods of Applying Preservatives

The manner in which a preservative is applied is as important as the character of the preservative for, no matter how good a preservative may be, it can give little protection unless properly applied.[1] In general, superficial methods, including brushing, spraying, and brief dipping, give rather superficial results. Brushing or spraying preservatives upon the woodwork of a house, for example, is practically useless for the preservative reaches only the exposed surfaces. The danger places are the joints and points of contact between the boards, or between the wood and the foundation, but these are necessarily left untouched. If the timbers contain decay or insects, preservative brushed or sprayed upon the surface does not penetrate deeply enough to kill them and they can continue to grow unmolested. Despite the extravagant claims of some promoters of proprietary preservatives as to the extraordinary penetrating properties of their materials, the depth of penetration into the side surfaces of timbers by brush or spray application usually averages appreciably less than 1/16 of an inch. A generous surface application of a good preservative to all faces of each piece of timber before it is placed in the structure undoubtedly will have some value in retarding attack, especially if no cutting of the wood is allowed after treatment. Any subsequent checking or wear of the wood, however, will penetrate through the very shallow penetrated area and permit the entrance of decay and insects. Termites are especially clever at finding weak spots in the treated armor and penetrating through them.

A question frequently asked is whether timbers in place in a structure can be treated effectively by boring holes into them and applying preservative under pressure through devices that make a pressure-tight fit into the holes. Theoretically this is possible but it is probable that complete penetration is seldom if ever attained. The preservative, if of suitable character, will penetrate along the grain from the holes and, if it enters any insect galleries it will flow into them freely. There will be practically no penetration in the sidewise direction, however, or downward from the bottoms of the holes. In order to get anything like complete penetration of the wood, the holes must be bored at fairly close intervals and practically through the timber. Complete protection, therefore, can be attained only at the expense of an excessive amount of labor as well as serious reduction of the strength of the timber. No doubt treatments conscientiously applied by this method can do considerable good but they are very easily slighted and, at best, the degree of protection they afford is problematical. Long experience carefully observed and recorded will be required before the reliability, effectiveness and economy of the method can be fully established. These questions can not be answered satisfactorily on the basis of laboratory tests or personal opinion but only by the results of actual experience.

Pressure treatment in closed cylinders is the most effective method of applying preservatives to wood but very good absorptions and penetrations can be obtained by the hot-and-cold-bath method. Neither treatment, of course, is applicable to timbers already in a structure or is very convenient for small scale operations. Furthermore, the wood should not be cut into after treatment but should be cut to final dimensions before the preservative is applied. The damage done by cutting through the treated area can be reduced considerably by brushing the cut surfaces generously with preservative but the protection thus afforded is usually much less than that afforded by the original treatment.

Lumber that has been properly impregnated with a good preservative can be obtained through some lumber dealers but, on the whole, it is not readily available in small quantities to home owners or termite control operators. The retail distribution of treated lumber has been a difficult problem of the wood preserving industry for many years. Progress is being made but, in many parts of the country, its satisfactory solution is still a long way off.

Protection Without Preservatives

While thorough impregnation with a suitable preservative is the best protection for timber exposed to conditions that favor rapid attack by decay or insects it is not always the most practical or economical method of avoiding damage. Buildings constructed of properly treated wood are well insured against wood-destroying organisms and can be highly recommended. On the other hand, the avoidance of the conditions that favor attack can be equally recommended. There are certain basic principles of good building practice that should be followed whenever possible in the construction of new buildings and in the repair of old ones. When it is necessary to violate these principles, either wood that has been thoroughly impregnated with a good preservative, or wood that has high natural resistance to decay should be used but when the rules are followed intelligently, long life can be counted upon without resort to preservatives.

The most important precaution to observe is to provide by every practical means that the wood shall remain dry at all times. Dry wood does not contain enough moisture to permit the growth of wood-destroying fungi. At moisture contents below 25 or 30 per cent, decay is greatly retarded and below 20 per cent fungus growth is prevented. Ventilation beneath buildings is of maximum importance in preventing decay and it also makes life more difficult for subterranean termites. For protection against both decay and termites, untreated wood should not be in contact with the ground or close to it. It is usually recommended that the distance between the wood and the ground shall be not less than 18 inches but no exact safe distance can be set. Under damp conditions where termites are plentiful, a greater distance may be required for safety but in dry situations a shorter distance may be satisfactory unless termites are very active. Ventilation of course, cannot take the place of barriers or poisoning for termite control but it should be employed in addition to other measures that may be necessary.

Moisture can get into wood from various sources, including plumbing leaks, condensation on cold water pipes in hot humid weather, condensation from humid air in cold weather, faulty construction or lack of repairs allowing the entrance of storm water, absorption through concrete floors on damp soil, wet manufacturing operations, excessive use of water in cleaning operations, and no doubt other sources. The architect and builder should do all within their power to "build the water out" in the beginning and the owner or occupant should do his part to see that dry conditions are maintained, so far as may be possible. When a building has been damaged by decay or termites, it may be more expensive to repair it and prevent further attack than to have built correctly in the beginning but

[1] A more complete discussion of Methods of Applying Wood Preservatives can be obtained upon request from the Forest Products Laboratory.

the same principles apply in making repairs as in new construction namely, keep water and termites out.

Termite Operators and Decay Control

I am strongly impressed with the fact that termite control operators have a wonderful opportunity to be of service to building owners in controlling decay as well as termites. I believe that more repairs are needed because of decay than because of termites and that, in many jobs, both termites and decay are at work. There is now no trade or profession trained in decay prevention or decay control to whom home owners can turn for repairs. Most of the jobs are too small to justify calling in an architect so that they are turned over to carpenters or building contractors, or the owner does it himself. You all know from your own experience that it is only the exceptional carpenter or contractor who understands termite control. This is equally true of decay control. What is needed is someone who understands buildings, decay, and termites and to whom the building owner can turn with confidence that his repairs will be made competently and intelligently; someone who not only replaces the damaged wood but who takes all practical precautions against recurrence of the damage, whether caused by insects or fungi. Anyone who thoroughly understands termite control should have little difficulty in informing himself upon decay control. When he has done this he has not only increased his usefulness to his customers but he has increased his opportunities for business. I hope that those of you who are termite operators will find it desirable to do so.

Termite Control in Buildings

By R. A. ST. GEORGE, *Entomologist*
U. S. Department of Agriculture - Bureau of Entomology and Plant Quarantine

EDITOR'S NOTE: *The following paper was delivered at the annual meeting at the Eastern Branch of the American Association of Economic Entomologists held in Baltimore, Md., November 18, 1938. Discussion followed at the special symposium.*

GENERAL CONSIDERATION OF THE PROBLEM

UP TO 10 years ago the public knew comparatively little about the termite problem, notwithstanding the fact that information concerning the habits and methods of control of termites has been known to and recommended by the United States Department of Agriculture and other institutions for more than 40 years. Today, however, the situation has changed markedly, for the mere mention of the word termite commands immediate attention and response from the public from coast to coast. As evidence of this, it may be of interest to relate that the correspondence on the subject received by the Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, has almost doubled within the last 5 years, some 4,000 such requests for information having been received during the last year, coming from every State in the Union.

Why has there been this marked increase in public interest in the termite problem? Is it because these insects have suddenly increased in numbers and rapidly spread over previously uninfested portions of the country? Are they causing more extensive damage today than heretofore, and are they really a menace to our homes? These are some of the questions on which information is often requested, and justly so, for a person becomes vitally interested when his own home is concerned.

To those of us who are acquainted with the matter, the problem is not nearly so complex. Termite populations have not materially increased. If anything, because of man's interference with this insect's natural habitat, populations have decreased. This is due to the building of dwellings in moist wooded areas, thereby necessitating the removal of trees, logs, and stumps which comprise the insect's natural source of food; and to the draining of such areas, thus depriving the termites of their other main requirement—water.

Again, inasmuch as the termite is a weak flier, traveling only short distances during its brief winged stage, and since all other forms or castes are wingless and are constantly dependent upon an abundant source of moisture, the chances are quite remote

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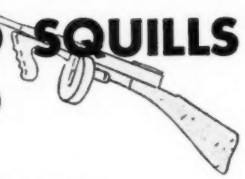

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that the subterranean termite can or has spread recently from one section of the country to another.

As most of you know, termite remains have been found imbedded in rock estimated to be some fifty-five million years old, thus indicating that these insects became established on this earth long before man appeared. Even as early as 1696 mention was made in literature of the fact that termites were present and quite widespread over the then known sections of the country. We have definite records of damage to buildings as far back as 1875.

It is possibly true that termites are infesting more buildings today and causing more damage than heretofore. In addition to the change in environment mentioned above, this apparent increase is due to other contributing factors such as the heating of basements during cold weather, which aids in keeping termites active the entire year, and the type of construction prevalent today. The fault does not lie entirely with the builder, for often the architect does not properly design the building from the viewpoint of termite protection. In addition to this, many builders still persist in following certain trade practices which favor the entry of termites into structures. Sometimes where a large termite colony is already established on a building site the building becomes infested shortly after construction is completed, as cases of damage are known to have occurred within two years, and swarms have been found even within the first six months. Fortunately such cases are exceptional, and where termites have to build up their colonies swarms are usually not noted for some 8 to 12 years later. The occurrence of these colonies in relatively new buildings places added emphasis on the importance of proper construction.

Although termites are charged with causing some forty millions of dollars' damage annually in the United States, they are not in reality so much of a threat to our homes as some people believe them to be. In fact, until of late the public has frequently been unduly excited by exaggerated statements of termite damage that have been made by unscrupulous individuals engaged in the business of termite control, and even now the trade is not entirely free from such a practice. Partially because of this fear and partially because of the large amount of publicity and information available concerning the insect, the public is now what might be termed fully "termite conscious" — so much so in fact that many people regard any sort of household pests as being termites, and it is only by careful investigation that one is able correctly to identify the insect concerned.

What we need at present, possibly more than anything else, is to make the architects, contractors, and builders realize the importance of termites in relation to the designing and construction of buildings. When this is done, they will then be more willing than at present to cooperate in modifying practices that are undesirable from the viewpoint of protection against termites. No doubt some of their hesitancy is due to the fear of loss of business because the adoption of correct practices would result in somewhat higher construction costs. However, it is believed that the disadvantage of a slight increase in cost would be more than offset by the business gained because of ability to advertise termite-proof construction in dwellings. People are quick to recognize the advantages of such a plan and see that it is far preferable to invest a few extra dollars in the beginning as a form of insurance than to spend from 20 to 40 per cent of the initial cost later for repairs.

It can be seen from the above that the termite problem is one that affects not only the home owner but also the architect and builder, and in addition all the agencies that lend money on property, such as banks, building and loan associations, and insurance companies. One of the most satisfactory methods by which the prospective owner can make certain that his new home will be constructed termite proof is for him to obtain community action in his locality relative to the mandatory section of the building code and have it so amended as to include such suggestions as are presented in the United States Department of Agriculture Circular E-338. Such precautions against termites then come under the jurisdiction of the building inspector, and it is his business to see that all requirements as set forth by the law are enforced.

Control Methods

Now that we have dscussed briefly some of the ideas prevalent concerning the termite problem, let us consider some of the methods used for control and the relative merits of each. These methods, named in reverse order of their effectiveness, include (1) soil treatments, (2) wood treatments, and (3) structural methods.

SOIL TREATMENTS constitute one phase of the termite control problem and one which usually meets with ready response on the part of the public. Possibly this is due to the fact that so many other kinds of insects are controlled in this manner.

Applying chemicals to the soil is a relatively new field of endeavor in termite control work, and because of this it is not yet possible to evaluate the method fully. As the result of information obtained from recent tests, indications are that several different chemicals, when applied to soils under certain conditions and in certain doses, may be expected to give at least 5 years' protection. Many others tested apparently offer little protection. Additional tests of such materials, made to determine the rate and extent of penetration obtained both vertically and laterally when applied to the soil, indicated that results are influenced by the type of soil concerned, the nature of the chemical used, the dose applied, and the manner of application. As might be expected, increased dosage aids penetration materially. Heavy soils appear to retard it, especially when oils such as coal-tar creosote (Federal specification grade) are used. Other chemicals of a more volatile nature, like orthodichlorobenzene, readily penetrate most soils, when applied in rather strong doses—approximating twice those ordinarily recommended by the Department of Agriculture or 4 instead of 2 gallons per 10 linear feet. It was found that these could be successfully applied without trenching by making 2-inch bar holes 30 inches deep and not more than 18 inches apart, as termites confined in cages placed equidistant between the holes and at different depths were killed by such treatment. This method cannot be used successfully with creosote.

In the light of the variability of results in these soil-poisoning tests it is not surprising to find an occasional difference in the efficacy of the same chemical when applied in various sections of the country. Such difference is believed to be largely influenced by the particular set of factors concerned. There is much still to be learned about the value of soil poisons in termite control work. In the near future we may know considerably more about them, for other agencies, such as the University of Illinois, some of the insecticide laboratories as well as commercial termite-control concerns, and other investigators such as O'Kane in New Hampshire and Von Schrenk in Missouri, have such research in progress, in addition to that being conducted by the Bureau of Entomology and Plant Quarantine. At the present time about all that can be said about the method is that it lacks permanency, although it does have a place in termite control work and serves as a valuable adjunct to structural control measures when the latter alone cannot be used advantageously in buildings.

With the use of soil poisons about foundations, we are confronted with another vital problem, that of protecting valuable flowers, shrubs, and trees located close to buildings. Considerable research needs to be done along this line, as apparently little information is available on the subject. Here again a number of variable factors are concerned, such as the nature of the chemical employed, the dosage used, the distance of the plant from the treated area, and the species of plant. In some southern localities treatments have been reported as being made successfully without regard to plant life and no losses have occurred. From farther north reports have been received indicating considerable losses following treatments. Cases are known where ordinary precautions were taken consisting of pruning the roots and protecting the side of the trench adjacent to the plants with suitable building or craft paper, and yet with heavy applications of chemicals death of the plants occurred. At present all indications point to the necessity of proceeding with extreme caution in such work.

TREATED WOOD should be used in new construction, as with replacements made of termite-damaged timbers, where it is unavoidable to prevent wood from coming in contact with or near the ground. The materials should be treated with an effective preservative such as coal-tar creosote. The results of tests conducted with this material and reported on previously by Dr. T. E. Snyder of the Bureau of Entomology and Plant Quarantine in cooperation with Mr. George M. Hunt of the Forest Products Laboratory of the Forest Service of the Department of Agriculture, may not be familiar to all and they are repeated here because they serve so well to indicate the degree of protection to be expected by treating timbers by three different methods, namely (1) standard pressure process treatments in a closed steel cylinder, (2) hot-and cold-dip treatments, and (3) plain dip, brush, or spray treatments. The first method gives approximately 25 years of protection, the second around 15 years, and the third prolongs the life of the wood from 2 to 5 years.

Neither soil treatments nor the use of treated timbers alone will give the same degree of protection as is given by proper structural replacements when augmented with properly installed metal shields.

STRUCTURAL METHODS can be so adapted as to make buildings termite proof. Those familiar with the recommendations of the Department of Agriculture know that much emphasis is placed on making structural changes in the foundations of infested buildings and proper construction in the case of new ones in order to insure permanent protection from termite attack.

By proper construction is meant the elimination of those factors which favor termite life, such as excessive moisture about the building site and the presence of cellulose-containing products in contact with the ground, and, in addition, insulation by means of mechanical barriers in the form of high-grade mortar or metal shields, or both, so as to obstruct the entry of termites into buildings.

As mentioned above, constant care must be exercised to make certain that contractors do not follow some of their old trade practices which aid the entry of termites

into buildings. Some of the more common ones are the following: (1) Leaving wooden supports in contact with the ground, (2) leaving grading stakes buried in concrete floors, (3) leaving form boards in place, (4) having dirt-filled porches, (5) leaving partially excavated, poorly ventilated areas within basements and (6) leaving wooden screeds and sleepers in contact with cinder bases or on thin layers of rough grout to which the wood is spiked.

MECHANICAL BARRIERS add considerably to the effectiveness of good construction. Much has been said pro and con concerning mechanical barriers such as metal shields. Suffice it to say here that up until now no one has yet furnished a photograph showing the failure of a properly installed shield of the type recommended by the Department of Agriculture. All reports of such failures to date have been traced to improper installations by individuals who lacked the necessary fundamental knowledge of habits of termites and either did not realize the faultiness of their work or, if they did, were not sufficiently interested to become acquainted with the information available through the Department's publications.

Too much emphasis cannot be placed upon the care and thoroughness with which shields must be installed if the desired protection is to be obtained. Unless the method is thoroughly understood it should not be attempted, because it only creates a false sense of security. Termite shields, like all other kinds of protective devices, are ineffective when improperly installed.

For walls made up of masonry units, such as tile, hollow blocks of various kinds, brick, or stone, it is best to cap them with high-grade mortar and to use the "breadpan" type of shield which extends entirely across the foundation. On the inside, it should project horizontally for a distance of 2 inches before being bent downward at a 45° angle for a similar distance. On the outside, if there is no shrubbery adjacent to the building and if no woodwork comes close to the ground and the foundation can be readily inspected periodically, the shield can either be ended flush with the exterior surface of the building or it can be projected as indicated for the interior wall. Where such a projection is objectionable because of appearance, a compromise can be made as to the amount of the extension without materially lessening the effectiveness of the shield.

For solid walls composed of a good grade of poured concrete, a 6-inch strip type of shield may be sufficient. Such a strip should be securely embedded in the wall, especially on the inside, for a distance of 2 inches, project horizontally for a like distance, and be bent downward as described above. In all cases the ends of the metal strips must be firmly joined, either by soldering or by an interlocking mechanical joint. Simply lapping and riveting the pieces together is entirely unsatisfactory, as the joint is most likely to open if the building settles or if much contraction and expansion of the metal takes place with changes in the weather. Particular attention should be given to such shields in only partially excavated portions of buildings and around the inside of excavated porches and sun parlors. Shields can be installed in infested buildings as well as in new ones provided the cost is justified.

Selection of Control Method

Various methods of treating buildings to prevent or control termites have been discussed. The selection of the particular method or methods depends largely upon the two following factors: (1) How much the building is worth to the individual, and (2) over what period protection is desired.

Some buildings are so old and severely damaged when termites are discovered that it is not worth while to spend much money on them. Naturally it would not pay to try to shield such a structure, or possibly to spend much money in the form of repairs unless it was structurally unsound and life was endangered. In other instances the owner may not have available immediately the amount of money necessary for desirable structural repairs but wants the damage checked at once. In this case slight structural changes augmented with a soil-poisoning treatment may be sufficient to serve the purpose. Again, the particular type of construction may not permit the kind of treatment most needed, and substitute measures may have to be used. Thus it can be seen that several factors have to be kept in mind in handling any particular case. After all of them have been taken into consideration, then, and then only, can the procedure be determined which will give the greatest amount of protection under the existing circumstances.

The thorough application of the selected method after a careful analysis of the situation, whether it is a soil treatment or an installation of a shield should be emphasized, and the work should be followed up with periodic inspections. This enables the owner to check on the effectiveness of the treatment and to make any necessary corrections before serious damage is done.

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Construction of Metal Termite Shields

By NEELY TURNER,
Connecticut Agricultural Experiment Station, New Haven, Conn.

THE literature on termite control contains many references to the use of metal termite shields, and many publications give specifications for termite-resistant construction, including the use of shields. No one article has given any extensive or detailed information on the practical side of shield installation. Most of the arguments over shields arise from misunderstandings rather than from factual differences. This article has been written in an attempt to give practical information to pest control operators. It has been prepared from an outline used in a meeting with Connecticut pest control operators on March 25, 1938.

Pest Control Operators and Shielding

Many operators have felt that they can have no profitable connection with shielding of buildings. In some parts of the country shielding is done by companies doing only that operation. In all sections architects and builders do this type of work. There is every reason for operators to be interested in shielding. Even in shielding new buildings competent operators can sell their services as inspectors.

In Connecticut a few operators have working agreements with competent contractors. The operator sells the service and collects a commission from the contractor. Ths works out very well in practice. Moreover, many jobs call for a combination of reconstruction and chemical treatment. The chemical treatment can be done profitably by pest control operators.

In new construction there is less opportunity for operators to profit. However, competent operators should be able to sell their services as consultants in construction of termite and vermin-resistant buildings. This is a field that at present is not adequately covered by pest control operators.

Definitions

A metal termite shield is a barrier constructed of sheet metal and inserted in or on the foundation of a building in such a manner that termites cannot penetrate through or tube up over it.

Hard copper sheets are cold-rolled or cornice-temper sheets. Hard copper is more difficult to handle than soft copper, but is preferable because of appearance of the finished job.

Specifications

General specifications are given in U. S. D. A. Leaflet 101 and in several state agricultural experiment station bulletins and circulars. The specifications vary somewhat in different sections of the country where termites may have different habits, especially in tube construction. The following specifications have been worked out for Connecticut:

1. Shields shall extend completely through or over foundations, without holes or cracks.

2. All shields shall be at least six inches above the ground on outside walls and 18 inches above the ground level in any partly excavated extension.

3. On wood-framed houses the shield shall be placed on top of the foundation, with a one and one-half inch exterior extension and a two-inch interior extension.

4. In masonry buildings the shield may be below the water table course with a concealed extension or set in plain walls with no extension.

5. In partially excavated areas the interior extension shall be at least five inches, with 18 inches clearance between the soil and any part of the floor structure above.

6. In finished basement rooms the shield shall be brought out flush with the plaster, so that only a line of the edge of the shield shows.

Items 4 and 6 refer to types of shields called "deflector" shields by one writer. In Connecticut these types are proving satisfactory when installed in infested buildings, which provides a more exacting test than in new construction.

These specifications refer, of course, only to shield construction and not to termite-resistant construction other than shielding.

Installation in New Buildings

Install the shield after foundation is laid and before any framework is in place. Bed the shield on a smooth base of mortar.

Sheet metal. Sixteen-ounce hard copper in ordinary buildings. Twenty or 24-ounce hard copper in heavy masonry buildings. Lead-coated copper in industrial areas.

Sizes to use. Hard copper comes only in strips and sheets. On an 8-inch foundation a 12-inch strip provides adequate extensions. On a 12-inch foundation a 16-inch strip is needed, and can be cut from a 32-inch sheet.

Corners, junctions and shields adjoining masonry porches require wide sheets to avoid joints at critical places. There should be no more joints than absolutely necessary behind masonry porches.

Joints. Hook or flat-lock seams with ¾-inch hooks. One joint at least every 10 feet. Few soldered joints are required.

Bending. All bending should be done on a break to obtain neat joints and straight lines.

Special attention is required at corners, junctions at partitions, masonry porches and level changes. There must always be a projection (except as noted in specifications) and there must be no flat surfaces giving termites free access to buildings.

Holding shield in place. Do not drive nails, even copper nails, through a shield. If necessary to hold a shield in place solder on a strap and nail through the strap.

Bolted sills. Cut a hole in the shield large enough so that the copper does not touch the bolt. Chisel out a cup in the foundation around the bolt, set the piece of shield in place, and fill the cup with hot coal-tar pitch.

Inspection. After the shield is in place keep an inspector on the job while sills and joists are being laid, and while plumbing is done, to see that carpenters and plumbers do not ruin shield.

Cost estimates. It is difficult to estimate shielding costs. For a house 30x30 with two small masonry porches, the copper would cost about $48 at current prices. The labor cost should not exceed the copper cost. In Connecticut actual jobs in new buildings have cost as low as one dollar a running foot of foundation and as high as five dollars a running foot, depending on the complexity of construction and the amount of overhead and percentage of profit charged.

Shield Installation in Infested Buildings

Not all infested buildings necessarily require metal termite shields. This matter has been adequately discussed in other publications.

The problem. The shield must be inserted in or on the foundation below first-floor framework and above the ground (see specifications).

The method. The only entirely satisfactory method is to take the weight of the building on shoring, remove the top of a section of foundation, insert a section of shield, and replace the foundation. If the weight is not taken on shoring it will be difficult to remove the foundation. Shoring is a highly technical operation and should not be undertaken by an amateur.

Many houses have been shielded without shoring. However, this method may not be satisfactory.

Shield design. Same as in new buildings.

Installation. The foundation is removed in sections and sections of shields installed. The foundation is carefully replaced and the shoring left in place a few days until the mortar hardens.

Concrete foundations. Shield installation is difficult in buildings constructed on monolithic concrete foundations. Under usual circumstances such installations may be avoided by properly closing any cracks in the concrete and by intelligent use of soil treatments. Shields for masonry porches can be installed by sill removal and replacement rather than by removal of part of the foundation. Many operators prefer to tunnel under the porch and use a combination soil treatment and removal of soil near the foundation rather than shielding under these conditions.

Inspection. Under some conditions termites will attempt to tube down over newly installed shields. This can be avoided by allowing woodwork to dry out before enclosing it, by spot treatment with certain chemicals and by frequent inspection after shielding. Six inspections at intervals of one month are considered desirable.

Costs. In Connecticut 30x30 wood-framed buildings on 8 or 12-inch stone, brick or concrete block foundations have been shielded for as little as $600, or about $5 a running foot. Some of the cost was chargeable to replacement of damaged timbers and changes to termite-resistant construction. Shielding costs can be reduced materially in Connecticut by more efficient work. It is the writer's belief that as the volume of shielding increases the costs will decline, until shielding may offer price competition to the more expensive systems of chemical treatment with expensive "guarantees."

Guarantees. None of the firms doing shielding in Connecticut have given "guarantees" on completely shielded buildings. The work has been done on the same basis as any other type of building construction. In a few cases these companies have had to do some extra work after shielding was completed. This work was done without extra charge because the original installation did not meet specifications. The cost of inspections was included in the original charge.

Further Information on Shields

J. M. Hamilton in "Architecture," vol-

(Continued on page 17)

umes 68 and 69, has an excellent article on design of shields.

The Copper and Brass Research Association, 420 Lexington Avenue, New York City, has published a booklet on "Termite Protection with Copper Shields." The booklet includes a number of excellent blueprints illustrating shield installation.

Disclaimer

All information in this article, including costs, refers to work actually done in the state of Connecticut at current labor costs. All references to termites refer only to the eastern subterranean termite. Operators working in other areas must take such facts into consideration, but this does not invalidate the principles stated. The specifications given are the author's, and have proved satisfactory in actual practice in Connecticut. No claim is made for them under other conditions, but they are at least worthy of consideration.

Diagnosing Termite Jobs

By G. L. HOCKENYOS

EDITOR'S NOTE: *This article was delivered before the Third Annual P. C. O. Conference at Purdue, January 15, 1939.*

EVERY termite job is an individual problem requiring careful diagnosis before treatment is begun. The preliminary inspection should include not only the house but the surrounding grounds and the nature of the area in which the property is located. Finally, an inspection of the property owner's pocketbook is in order. No levity or cynicism is intended in this remark. A doctor does not recommend a Caribbean cruise to a seven dollar a week laundry worker and there is no reason to recommend a five hundred dollar termite control project to a man whose house is worth only eight hundred dollars.

Inspection begins with the location of the visible damage and the characteristic trails or galleries. Damage that is not visible may often be located by the practice of sounding the sills and joists with a light hammer and by probing with an ice pick or similar tool. The next step is to study the structure of the building with regard to its susceptibility to termite attack. What type of foundation does it have. Termites do not penetrate very far through good poured concrete foundations but may work through a great thickness of rotten concrete. Hidden galleries may exist between the two or more courses of brick in a typical brick foundation and of course hollow tile or cement block is a perfect point of entrance for termites.

Infestations often come from under cellar floors and all expansion cracks between foundation and floor should be examined. In constructing a building it is not uncommon for wooden supporting columns, stair strings and parts of coal bins to be allowed to have contact with the soil under the cellar floor. Cellar door frames generally are close to soil. Steps and in fact all points of entrance into a building should have special attention. Termite galleries are seemingly more common in the corner of chimneys than in most other parts of the foundation. Any source of soil moisture outside of the building such as hydrants that may be allowed to drip or gutter downspouts that may overflow should occasion good inspection on the inside at that point.

Basement apartments with wooden floors laid over cement and with lathe and plaster walls or ceilings are of course difficult of inspection and it is usually advisable to tear out a small section to determine the construction at first hand as too much dependence can not be placed on the architect's specifications even when these are available. Sometimes the contractor has ideas of his own and these seldom call for better materials or construction than the specifications require.

The examination from the outside of the building takes in not only the matter of accessibility of the soil adjacent to the foundation for treatment but, the nature of the soil itself and of course the proximity of ornamental planting and the location of wells that may be used for drinking water.

The prevalence of termites in the ground about the building should be determined by examining fence posts and any other forms of wood in contact with the soil around the house. Inquiry should be made as to the prevalence of termites in the neighborhood. Finally the approximate value of the property should be estimated and cost of partial or complete treatment calculated. With this information in hand you are ready to talk intelligently to the owner and advise him as to what treatment you believe best fits his particular problem. Possibly, the building should be jacked up and metal shields installed, possibly a complete or partial soil poison treatment is indicated. Maybe you had better sell the owner ten gallons of soil poison and show him where to use it. Then again the building may be so constructed that no appreciable damage can occur or it may be an old building in which the termites have already eaten about everything they want. In any case tell the owner the facts to the best of your knowledge and you will probably gain his respect whether you get the job or not.

Lethane 384 Special

The Synthetic Insecticide Concentrate

LOW COST

HIGH KILL • NON-CAUSTIC

PLEASANT ODOR

PROGRESSIVE pest control operators know that it is no longer necessary to resort to insecticides that are caustic in nature or that are objectionable from the standpoint of odor.

Lethane 384 Special used as the sole toxic agent in a good deodorized base provides a high-killing, low-cost insect control that is pleasant to use and is unobjectionable to your clients.

RÖHM & HAAS COMPANY, INC.

222 West Washington Square

PHILADELPHIA, PA.

CHICAGO • KANSAS CITY, MO.

Canadian Agent—P. N. SODEN & CO., LTD., MONTREAL, P. Q., CANADA

Termite Committee Report

By WALTER B. HILL, *Chairman*

EDITOR'S NOTE: *The following report was submitted to the Sixth Annual Convention of The National Pest Control Association held at Omaha, Nebraska, last October.*

HOW PROUD we should be of membership in the National Pest Control Association. High ranking government officials of the Department of Agriculture are here with us—not to investigate, not to criticize but to cooperate and help us solve some of our many problems. It is a distinct honor and great credit to the founders of this association that in the short span of six years they have conducted the affairs of this association with such earnestness and vision that it has made possible the cooperation and help of these distinguished gentlemen from the government and universities, and it places upon everyone of us collectively and individually the responsibility of safeguarding and justifying this gesture of confidence on their part.

The termite control operator is a new comer in the pest control industry. Unfortunately, the termite industry was founded with one glaring outstanding mistake and that was **free inspections.** This step was taken because nobody knew or believed their property was infested with termites and many plans had to be used in gaining entry into houses. Inspections were in reality not free then and are not free now (this, of course, does not include some California operators and a few others around the country who make a charge for termite inspections.)

The customer has always paid for free inspections, and the sooner the phrase "Free Inspections" is abolished, the better off the industry will be. It is still and logically possible to make inspections without charge but to change the approach to the public, advertisements could read that no charge can be made for inspections because no two houses are alike and in many cases no treatment of property is possible and a charge for this information would be manifestly unfair.

There is not a national magazine but that carries advertisements to clip and mail a coupon and get something free and I doubt if one business man out of a hundred mails these coupons. Experience has taught them that there is nothing worth while that is free. Let's know our business better. Let's sell it better.

Take the case of **The Master Salesman:** A policeman patrolling the Brooklyn Bridge one night grabbed a man just as he was about to jump off. He asked the man what fool idea made him want to commit suicide and told him to walk with him while he patrolled the bridge and he would convince him he was doing a foolish thing. They walked back and forth several times and then came back to the same spot and both jumped off. The policeman simply met a better salesman.

We have in the past and are now wasting too much time talking about "The Fly-by-Night." He will exterminate himself in time. We must be more concerned with the larger operators who do so much to harm our industry by advertising a lot of promises that won't stand the acid test.

The main objective of the Termite Committee, with the help of the membership of the association, is to see that this abuse is stopped and we are fighting with no holds barred and whether it is a member of this association or a non-member we are going to clear up this false-claim evil. There has recently been filed with the Federal Trade Commission a complaint against a large firm for using unethical advertising and making false claims. Three other smaller firms are being investigated.

In our city we take the positive position that any money spent for termite control is not wasted. If a home owner pays a poorly informed and equipped operator $20.00 for termite control, he gets value received. No property owner likes to be told that he was a fool and has wasted his money. When a case like this is brought to our attention, we apologize to the property owner for our own neglect as well as the Memphis Pest Control Association for their not knowing more about recognized termite control operators. We try and leave the thought with the property owner that if the inexpensive treatment proves unsuccessful, to call on us. A liberal attitude toward the small operator will help our industry.

The industry has been greatly disturbed by a termite bulletin published by the National Better Business Bureau. Do not criticize the Better Business Bureau too severely for this bulletin. They apparently were misinformed and did not consult the proper authorities, or if they did, research based on facts was not fully included. The bulletin is very much like a bank robber who in the excitement suggests that a posse be formed to hunt the burglar and then joins the hunt for himself. The instigators, if indeed there were such, of this bulletin can be said to be guilty of the same act, unwittingly perhaps, or opportunistically. It certainly appears that somewhere along the line those advising gave the wrong steer to the National Better Business Bureau. The bulletin may be said to warn the public against the "slick," or may be intended for the "slick" operator, but certainly the bulletin is no aid to the "smart" reading public. The bulletin looks like trickery in its build-up toward the rapidly outmoded method of treating timbers in place. Any competent termite operator knows that first and foremost comes structural changes, replacements, and repairs. The next important step is that the soil poisoning which would include treatment along foundation walls, inside and out, trenching at times, etc., and possibly on the top of foundation walls underneath the mud sills and beams to allow for toxic chemicals to permeate the cracks and crevices. The latter depends largely on the type of foundation wall. Over and above all is the matter of proper inspections and personal supervision of termite control work. Carpenters and contractors are not essentially termite control operators.

Let's not quibble about prices, price cutting, or cheap jobs, because for every sale that is lost, there are a hundred that can be developed by intelligent sales promotion.

Take the case of the scientist. He took a large glass bowl filled with water and put a glass partition through the center. On one side of the partition he put twenty large silver side minnows and on the other side a two pound bass. The bass struck at the minnows ten or fifteen times and every time got a busted nose. Then the scientist removed the glass partition and the minnows swam all around the bass unmolested. He was completely sold on the idea that there was no use hitting again. The moral is "Isn't there lots of these same fish symptoms in us at times."

Take for instance the increased fire hazard caused under houses and buildings by termite damage. A sill or joist badly damaged by termites is like excelsior and a tiny spark or lighted match will ignite it instantly. On the other hand a solid sill can hardly be set afire. Why not promote this idea among underwriters and create another powerful ally for our industry. In some sections not over ten per cent of houses are infested with termites. Why not promote prevention and not cure. Make the other ninety per cent prospects for prevention. Ninety per cent of all houses in Memphis carry tornado insurance yet there has not been a house damaged by a tornado in Memphis in twenty-five years.

Let's promote our industry and look for newer and more prolific fields.

Objectionable Advertising

THE CODE of Ethics of our National Pest Control Association states the following: "The member in his advertisements or other solicitations of business shall not use tricky, fraudulent or misleading wording or methods."

At the Sixth Annual Convention held at Omaha, Nebraska, October, 1938, the Committee on Advertising submitted a report on this subject. This report was not only well received but given unanimous approval at the business session of the convention assembled so as to be considered as a general policy of the National Pest Control Association.

The pertinent matter is as follows:

Whether pleasant or not, it seems in order that the association should formulate suitable definitions as to what constitutes "tricky, fraudulent or misleading wording."

The association need not, and probably at this state should not, attempt to "outlaw" or to "prohibit." But it should go on record as disapproving classes of copy generally agreed objectionable. This would at least establish some standard, while retaining the "educational" attitude which is traditional with the association. The adoption of a position substantially as follows is recommended:

"The National Pest Control Association classifies the following as objectionable within the meaning of the Code of Ethics, and disapproves their use in advertising copy. It considers these not essential to effective advertising, and believes that the best interests of the industry and of the public will be served by their voluntary curtailment and eventual elimination:

(1) **Undue Emphasis on 'Guarantees'** (When 'Guarantees' are given prominence comparable with that given the service itself which we have to sell, the effect can only be to invite similar excesses and to undermine public confidence in our industry).

(2) **Reliance on Superlatives.** (Superlatives are seldom justified in fact. Their use signifies mainly, poverty of ideas. 'Biggest,' 'best,' 'only,' '100%,' 'positively,' etc., are challenges to bigger and better super-

latives, and have the net effect of degrading both the advertising and the industry in public opinion.)

(3) **Mention of 'U. S. Government.'** (Reference to the 'U. S. Government' seems solely for the purpose of implying, however indirectly, governmental endorsement of materials, methods or organizations. Government agencies never endorse nor authorize 'testimonial' copy. Violation of this known desire is clearly 'tricky,' and a breach of faith.)

(4) **Emphasis on Cheapness.** (The terms 'Cheap,' 'Lowest Prices' and others, emphasizing the idea of 'cheapness,' serve only as propaganda for price buying and price service; essentially suicide. A similar effect is fostered by the featuring of 'free' services. Emphasis is much better placed on **economy** of **good** service.)

(5) **Mistatement of P. C. O. Experience.** (Examples: '25 years in Blank City'—Actually signifying length of residence there; in pest control business a much shorter period. '15 years experience'—when this 'experience' has been other than as a bonafide P. C. O. Such statements, besides misleading the public, are grossly unfair to established firms, who have every legitimate right to feature their years established.)

(6) **Unsupported Technical Statements.** (Statements of fact in matters of chemistry, entomology, etc., which are not acceptable to recognized **non-commercial** authorities on these subjects. This includes quotation of such unsupported statements or claims, which may originate with manufacturers of supplies or proprietaries.)

(7) **Extravagant Claims of Results.** (Claims as to speed, completeness and permanency of results, not justified by the facts of practical, everyday pest control operations. Examples: 'Positive results in 3 hours,' 'only one application needed,' 'not one failure in 8 years.')"

Termites Attack Telegraph Wires

Adelaide.—The recently completed Overland Telegraph route between Port Augusta (Southern Australia) and Darwin, (Northern Australia) is declared by its constructors to hold several world records. They claim for it:

First—The longest telegraph line in the world, covering 1,900 miles.

Second—The quickest construction, having been built in 23 months, during which time 36,000 telegraph poles of wood and steel were erected.

Third—That it has the most terrible termite troubles in the world.

It is really the termite trouble, they insist, that should bring it fame. As a result of the investigation of a recent short circuit that cut off communications, here is what linesmen found.

Termites had attacked one of the wires that ran into the ground. First they had penetrated an inch of earthenware tubing. Then they had eaten their way through a generous coating of arsenic and vaseline. After that they had pierced a lead cable a quarter of an inch thick. Then they had eaten the insulation off the electric wires and were about to start in on the wires themselves, electricity and all, when the linemen finally got to them.

This, the constructors say, is the greatest obstacle to all telegraph lines in the tropics.—Geneva (Ohio) Free Press.

Patronize Our Advertisers
They Make This Journal
Possible

Pest Control Operators

Centrobulb A 8-oz.

Centrobulb B 14-oz.

ATTENTION

The new *Centrobulb* is here with the following improved features:

1. Shaped and balanced to lie in palm without cramping hand.
2. Bulb — Guaranteed seamproof.
3. Nozzle — Heavy, rustless metal, guaranteed not to crack even under pounding. Deep cut thread —it can't work loose.
4. Largest opening for instant filling —stay tight metal screen to prevent clogging.
5. Nozzle base permanently attached to bulb.

You'll Be Surprised At Our Low Prices.

CENTRAL RUBBER PRODUCTS
830 Broadway **New York, N. Y.**

Important Perfumes!

for Fly Sprays

Felton Kerex Perfumes enable you to produce fly sprays with maximum consumer appeal. They efficiently neutralize disagreeable odor and impart the kind of fragrance that gets the sales! ***Costs you less than 2c per gallon of spray to use these superior perfumes.***

KEREX II — For Lethane Sprays. Tested and approved by Rohm & Haas, manufacturers of Lethane.

KEREX L'ORIENT—A sweet vanilla-like fragrance.

KEREX BOUQUET—A floral odor of proven merit.

KEREX V450—A clean "outdoor" scent.

for Naphthalene and Paradichlorbenzene

COLOROMES—Impart lasting fragrance and color in one easy step. Your choice of a large assortment of popular perfumes and colors . . . or perfumes without color if desired. Economical! Effective! Proven!

for Water Base Products

AQUAROMES—Trouble free, economical perfume oils, completely soluble in water. Perfect for a large variety of products such as Deodorant Sprays, Theatre Sprays, Liquid Soaps, and many others. Large selection of popular fragrances.

for Formaldehyde Products

FORMAROMES—Overcome the inherently disagreeable odor of formaldehyde and produce pleasing fragrance in antiseptic, disinfectant, deodorant sprays, etc. There are Formarome perfumes for every type of formaldehyde product.

WRITE FOR SAMPLES

Or send us a sample of your unperfumed products so that we can recommend the proper perfume.

FELTON Quality

FELTON
CHEMICAL COMPANY, INC.
599-603 Johnson Ave., Brooklyn, N. Y.
STOCKS IN PRINCIPAL CITIES

When Writing to Advertisers Mention "Pests"

WHAT'S NEW IN PEST CONTROL-PERSONALS

Our sincere sympathy is extended to Mr. Gordon Bund, of the Safe Way Exterminating Co., of Buffalo, New York, who recently was bereaved with the passing of his father. Mr. Bund's father was active in the company with his son.

A short sentence which has a bit of humor, but at the same time indicates the appreciative note for interest taken in industry affairs, was a part of a letter from Dick Andes of Lancaster, Pa. The wind-up sentence of his letter reads: "Good luck to you for 1939, and every year, and many thanks for shouldering a musket in behalf of the boys out scattering bread in dark cellars for a living."

The Davmar Exterminating Co. dissolved partnership with January 1. David G. Safran will continue business as the Safran Exterminating Co., at 1137 Prospect Avenue, Bronx, New York, while his partner, Mr. Berman, will operate as the Foremost Exterminating Co., also in the Bronx, New York.

Dr. G. F. Knowlton, Associate Entomologist of the Utah Agricultural Experiment Station, made a few pertinent remarks recently: "Insects cause an estimated average annual loss in the United States of two billion dollars, as well as annoyance, irritation, and disease, which cannot be estimated in dollars. This sum was the average arrived at by workers throughout the nation, after a careful study of crops and live stock losses." "Modern transportation has increased spread of numerous pests."

It is interesting to note that the caption "Pest Control" is more frequently used than it has been in the past.

The State Journal at Reno, Nevada, reported that approximately 1,018 tons of poisoned bran will be available in Nevada for the 1939 grasshopper control program.

Lother Vogel of the Atlantic Exterminating & Fumigating Co. of Brooklyn, New York, took a much earned vacation by visiting in New Hampshire during the recent holidays.

Congratulations are due to Mr. and Mrs. David G. Safran, whose marriage took place December 11 at the Concord Plaza Hotel in New York, New York. Mrs. Sanfran is the former Miss Mae Graff. Mr. Safran operates as the Safran Exterminating Co. in New York City.

Our sincere sympathy is expressed to the family of Mr. David G. Safran of New York City, who, on December 21, lost his father. Mr. Safran operates the Safran Exterminating Co., of New York City.

Paramount Exterminating Co. announce the location of their offices at 37 Fifth Avenue, Brooklyn, New York. Congratulations.

Var-Lac-Oid Chemical Co., 116 Broad Street, New York City, has been appointed distributor for United States on new production of Thallium Sulphate testing over 99.5% manufactured by "Pechiney" of France, a large metallurgical organization with plants throughout that country.

John Potts Linn, of Omaha, Neb., was installed as Senior Warden of the John J. Mercer Lodge No. 290, A. F. and A. M. on January 11th. It would appear that no sooner John is through with one job, than he continues right ahead with another fine work. We think that John started something else too, when his local convention committee built their own booths for the exhibit at Omaha and right now these booths are in demand by other associations holding conventions in Omaha and John reports that all profits go to the National Association. Thanks, John, and congratulations.

We were sorry about hearing of the fire that almost ruined completely the fine home of M. F. Levenson of Omaha, Nebraska. Happy though that insurance coverage will take care of the major portion of damage, but those things of intrinsic value are lost.

The sincere sympathy of the industry is extended to Mr. and Mrs. A. M. Akers of Cleveland, Ohio. The sad news of the death of Mr. Akers' father on Christmas Day certainly is distressing.

From Sydney, Australia, comes a very cordial invitation through Mr. B. L. Houghton of the pest control firm of Houghton and Byren. As a member of the National Pest Control Association, Mr. Houghton tells of the splendid summer season that prevails during the month of December and is urging pest control operators from the United States to make the visit to Australia so as to enjoy some of this splendid weather accompanied with much surf and sunshine. Mr. Houghton has assured us that he will write an interesting article on a specialized type of pest control, "Extermination and Control of Rabbits."

Congratulations are in order to the Guaranteed Fumigators of Hamilton, Ontario, Canada, who have recently moved to a more propitious location at 149 James Street North. Mr. C. E. Ryder and his partner, Mr. Herod, are to be greatly complimented and we extend our best wishes for continued successful business.

Safety and precautions cannot necessarily become matters of legislation. A recent fatality would indicate that a fumigator was not as careful as he should have been relative to proper ventilation in cold weather. Cold walls absorb HCN. There should be proper ventilation in terms of reheating a property so as to take out of them the stored-up gas in the walls and then airation takes place again.

A Call From a College for Service

"Get the squirrels out of the rooms in the girls dormitory and skunks from under the boys dormitory."

National Association Notices

Members are urged to call on each other, especially when traveling about the country. A permanent office is not required, but for those firms visiting New York City, it is urged that the secretary be called at either South 8-4120 or South 8-4121 and appointment will be arranged.

Communication No. 135:
Membership service letter sent December 29, 1938, featuring the report of the Committee on Legislation.

Communication No. 136:
Membership service letter sent January 9th. This letter included details of Classified Telephone Directory Listings, and Advertising policy adopted at Omaha Convention relative to objectionable "copy."

Communication No. 137:
This letter also mailed to all pest control operators of the southern states giving program of the Southern Pest Control Operators Conference held at Louisiana State University, Baton Rouge, La.

(Continued on Page 21)

HEADQUARTERS
FOR
WIZO RAT PASTE
FOR CONVENIENT AND RAPID RESULTS
Kills rats and mice. Contains a deadly poison. Spread thinly over bread, cut into squares and place wherever rodents appear. Rats leave premises and die outside.
25 lb. cans @ 45c per lb.
10 lb. cans @ 50c per lb.
5 lb. cans @ 55c per lb.
1 lb. cans @ $6.00 per dozen
½ lb. cans @ $3.60 per dozen
F. O. B. New York, N. Y.
Write for our catalog describing our complete line of exterminating and sanitary chemicals.
ELKAY PRODUCTS CORP.
323-327 West 16th Street New York, N. Y.

SODIUM ARSENATE
SODIUM ARSENITE
JUNGMANN & CO.
INCORPORATED
157 Chambers Street, New York
Barclay 7-5129-30

Communication No. 138:
Membership service letter sent January 13, featuring announcement of the cooperative plan with regard to chain stores. The itinerary of secretary's third annual trip also included. A page of "Questions and Answers" was also included.

Communication No. 139:
This letter to the entire industry was sent January 19th telling of the general program of the association.

Subsequent Service Letters:
There will unquestionably be other service letters during January but owing to the fact that these notices are being written January 9th just before the secretary jumps off for the annual visit, exact dates cannot be given. The subject matter will include Insurance, Questions and Answers, etc. Complete details of these service letters will follow in March issue of Pests.

Special Letter to New York City Firms:
Plans outlined for Seventh Annual Convention to be held at Hotel Pennsylvania, October 23, 24, 25, 1939, was sent January 12th.

Communication No. 6-C:
Usual letter to Board of Directors taking up the routine business of the association was mailed January 6th.

Pacific Coast Pest Control Operators Conferences:
Do not miss this if you can possibly attend. See story about the conference in this issue of Pests. Conference will be held at University of California, Berkeley, California, February 20, 21, 22, 1939.

LOCAL ORGANIZATION NEWS

Connecticut

The Connecticut Pest Control Association was organized at New Haven January 13. The meeting was held at the Connecticut Agriculture Experiment Station through the cooperation of Nealy Turner, Assistant Entomologist.

The constitution and by-laws adopted were a modification of the constitution and by-laws of the National Pest Control Association and New England Pest Control Association. The officers elected were: F. E. Bohman, Hartford, President; James M. Van Sloat, Greenwich, Vice-President; Fred M. Haas, Hartford, Secretary-Treasurer. Ten firms were represented as charter members and we hope that within the next month the majority of the firms operating in the state will join.

The next meeting has been set for February 10 at 7:30 p. m. at the Connecticut Agricultural Experiment Station and the guest speaker is expected to be Robert M. Isaac of the U. S. Biological Survey, who will talk on "Control of Rats."

A general discussion followed the routine business of formal organization with emphasis on the ethics of the pest control profession so that there could be a better understanding among the operators. It is likewise hoped that there can be arranged a short series of lectures at the Connecticut Agricultural College.

Thos. J. Ledwith of the Berg Exterminating Co., of Hartford, Conn., attended the Purdue Conference of Pest Control Operators and will also report about the splendid program at the next meeting of the Connecticeut Pest Control Association.

New England Pest Control Association

The largest attendance in the history of the New England Pest Control Association, thirty-six, was present January 9th at Hotel Lenox in Boston, Mass. President Charles W. Houghton presided.

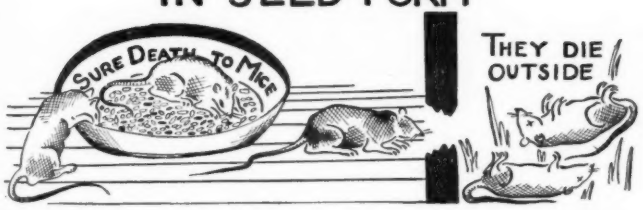
Mark Weintraub, secretary, presented his monthly report and announced that the following committees were appointed: "Credit and Bad Account System," T. Sheehan, M. Weintraub, A. Cory, W. D. Starbird; "Grievance," George R. Elliott, Lewis Rich and Lester West; the monthly educational committees that provide for two of the members to prepare the program brought assignments for the February meeting to E. W. McClure and L. Weintraub.

Among other items of business was the increase of the annual dues to $10.00 per year and provision for associate members that would permit manufacturers and supply houses as well as other officers and managers of the member firms to attend meetings by paying an annual fee of $5.00. Associate members have no voting privileges. It was also agreed that each member might bring a guest to the meeting.

(Continued on page 22)

FLU-MOUS-DED
[THALLIUM]

IN SEED FORM



FLU-MOUS-DED, thallium seeds, ready for use are unsurpassed as the most effective rodenticide, and leave no decomposition odors.

Exclusively used and recommended by professional exterminators and pest control operators, warehousemen, food establishments, hotel and apartment owners everywhere.

Positive action cuts amount of material required, reducing costs, and eliminating return calls.

25c Household Size—14 in display box $2.00

COMMERCIAL CONTAINERS
Half lb. and one lb. boxes—10 lbs. min. $3.50

BULK PACKING

10 lbs.	32c lb.	50 lbs.	24c lb.
25 lbs.	26c lb.	100 lbs.	22c lb.

F.O.B. New York

FLU-MOUS-DED IS THE CHEAPEST . . .
BECAUSE IT'S THE SUREST KILLER.

Inquire about distributor's territory open.

F. LUCAS • 174 West 65th Street • New York, N. Y.

PROVEN
TERMITE PROTECTION

• The EXTERMITAL PROCESS

has been tested through hundreds of applications of varying nature. In different soil conditions—around various types of foundations—applications made in every month of the year—under all these varying conditions the results have been highly satisfactory.

No worrying about re-treats when your work is done by Extermital methods. The Process DOES GET RID OF TERMITES—without objectionable odor or muss.

Sold only through authorized Distributors—under exclusive contract for protected territory.

Our Distributors are making money. They are also establishing themselves in a permanent business.

Territory is being opened as rapidly as Distributors can be properly trained. Your territory may be open. Write today.

Extermital Chemicals, Inc.
11 St. Marys Street Dayton, Ohio

Guests of the evening were George Lay, Superintendent of Section "8" of the United States Bureau of Biological Survey and George Dyer, field representative of the Bureau of Biological Survey. Both Mr. Lay and Mr. Dyer spoke of the spirit of co-operation and their pleasure to be of any assistance possible. Among the old timers who have been absent for several meetings but present at the meeting were Charlie Burkett of the Reliable Insecticide Co., and Joe Eckman of the Ratin Laboratories.

President Houghton spoke of his attendance at the Connecticut Pest Control Operators meeting and Bartlett W. Eldredge told of the activities of the National Pest Control Association and particularly urged the men to attend the Purdue Conference and other meetings of the Association. The forthcoming entomological short course that is to begin in February at the Museum of Natural History was also outlined by Mr. Eldredge. Greetings from the National Pest Control Association were well received.

The speaker of the evening was George R. Elliott who followed through with the same general theme of Mr. Lay and Mr. Dyer on the subject of rat and mouse control by showing motion pictures of rat control work of the Bureau of Biological Survey. This was followed by a discussion of the activities of the National Association and some of the policies in operation by the Association.

The next meeting will be held at Hotel Lenox on February 6th at 8 P. M. All firms in the New England area interested in the New England Pest Control Association are invited to contact the secretary, Mark Weintraub, at 276 Devonshire St., Boston, Mass.

"You cannot cure your sins by coddling them."

Buettner Re-elected President of Associated Exterminators and Fumigators of New York

The regular monthly meeting of the Associated Exterminators and Fumigators of New York also took the form of the annual meeting when election of officers and directors took place on January 11th at the association headquarters, 7 East 44th St. William O. Buettner was re-elected president; Arthur O'Connor of the Security Exterminating Co., first vice-president; Murray Gladstone of Abbot-Madison Exterminating Co., second vice-president; William J. Parker, secretary-treasurer; and the three directors, which with the officers just mentioned, will comprise the Board of Directors of the association for the year of 1939 are S. S. Rosen of Guarantee Exterminating Co.; Merwyn Horwitz of Excelsior Exterminating Co., and Joe Pero of the American Exterminating Co. Committees for the ensuring year will be announced at the next meeting.

Consideration was given as to possible group action through the Associated Hospital Service of New York that would permit members of the various firms and their employees to have the advantages of the "3-cents-a-day plan for hospital care." Howard B. Crane of the Associated Hospital Service explained the advantages of this service. A committee composed of W. J. Parker and Manny West of the Continental Exterminating Co., will report at the next meeting.

The speaker of the evening was Dr. John B. Oberwager, chief of the Sanitary Board of the New York City Department of Health, who spoke informally of the cooperation and better understanding possible as emphasis be placed on "Safety." The duty of the health department is to protect the public and after outlining the type of complaints that come before the fumigant board which governs the pest control industry of the city under what is known as Section 104 of the Sanitary Code, Dr. Oberwager made a few pertinent suggestions. Employees cannot be cautioned too often as to safety measures that must be observed and Section 104 clearly states what must be observed with regard to distributing the various insecticides and raticides and fumigation operations. Dr. Oberwager would have employees read Section 104 regularly and have them sign the instruction sheet that they have carefully read all clauses of Section 104. All poisonous substances should be kept under lock and key so that none of these chemicals might be taken out by mistake or used improperly in mixing preparations. More pride should be taken in the matter of workman's kit, making sure that the equipment and chemicals are carefully packed and properly labeled. After his talk, Dr. Oberwager led a discussion of "Questions and Answers" which had as their goal, better cooperation.

The Committee on Legislation composed of Eugene Sameth, Theodore Schmerle, Murray Gladstone, S. S. Rosen, Sidney Wimmer, E. N. Goldey and M. West, expect to submit a report seeking certain amendments to the Sanitary Code, at the next meeting.

The attendance was over fifty and there were welcomed two new members. Industrial Fumigant Co., through B. Stadholz, and Five Boro Exterminators, Inc., through George Kaplan.

A motion has been made to change the name of the association to the New York Pest Control Association and action de-

A NON-POISONOUS RAT KILLER

15c PER POUND IN ONE-POUND TIN CANS

For Safety, Effectiveness and Economy
—USE

SUR-RID RAT KILL

Try It—It Saves Time and Money

SUR-RID Rat Killer is tested in our own laboratory on both wild and tame rats and we GUARANTEE the Killing Power.

SUR-RID Rat Killer contains meat, cereals, vegetables and just the right amount of a tested killing agent. It is especially appetizing to rats and mice as there is only an odor of fresh meat and vegetables and there is no raw odor of chemicals; four distinct lures, MEAT, FISH and CEREAL and CANTALOUPE, packed either assorted or of one kind to a case, which contain three dozen one-pound cans.

Due to the increase in the sale of this Rat Killer, we are reducing the price as follows:

	Per Dozen
Three Dozen Lots, labeled	$2.00
Gross Lots, labeled	1.90
Gross Lots, no label	1.80
The half-pound size, packed five dozen to a case	1.25

Freight Prepaid on Gross Lots.
Less Than Gross Lots F. O. B. St. Louis, Mo.

SUR-RID PRODUCTS COMPANY
Manufacturers
(FORMERLY REAL EXTERMININATING PRODUCTS CO.)
455 PAUL BROWN BLDG., ST. LOUIS, MO.

FACTS

About Per-Mo Permanent Mothproof Liquid

Per-Mo is easily applied to rugs, carpets, over-stuffed furniture, drapes, blankets, wearing apparel and other woolen articles. Chemists' tests prove that Per-Mo becomes an integral part of the fabric, the same as a dye. Its efficacy is not impaired by dry-cleaning, washing, exposure or use. Even years after the application of Per-Mo moths cannot injure any fabric so treated.

WHAT SOME USERS OF PER-MO SAY

We are proud to say that we have used quite a bit of the Per-Mo mothproof material, and so far, have found it to be very satisfactory.—Pest-Control Operator.

Since using Per-Mo in this building five years ago we have never seen any sign of moths. We cannot recommend your product too highly.—Apartment Manager.

Since having my entire house treated with Per-Mo I've had no fear of moths whatsoever, and it has been a joy and help. I can most sincerely recommend Per-Mo.—Housewife.

Per-Mo Mothproof is a colorless and odorless liquid, that is applied to any woolen fabric with a spray-gun, either electrically or hand powered. Write for full particulars.

Salesmen and Jobbers Write for Exclusive Territory.

PER-MO MOTHPROOF CO.
3729 Virginia., Dept. M. Kansas City, Mo.

ferred until the next meeting so as to give the entire membership an opportunity to give proper consideration to the desirable change in name and thus join with other associations throughout the country.

Atlanta, Georgia

A splendid dinner meeting was held in the Pine Room of the Ansley Hotel, Atlanta, Ga., January 25 to greet Bill Buettner, Secretary of the National Pest Control Association. Otto Orkin, Regional Vice-President, was presiding officer of the meeting and introduced the speakers.

W. H. Edwards of the Department of Health spoke of the closer relationship that existed between the Health Department and pest control industry and how further cooperation would be possible in connection with a necessary rat campaign.

Dr. Dean Roberts of the Health Department explained other problems with regard to rats. E. C. Gillette represented the Southern Bell Tel. and Tel. Co., and expressed keen interest in making for a more unified classified telephone directory.

"Bill" Buettner covered several subjects and led discussion dealing with cooperative measures that might be put into effect. The men of Atlanta are arranging for another meeting in the near future, leaving the plans and program to Fred York, Sr., and Otto Orkin.

Those in attendance were: W. H. Edwards, Jr., Dept. of Health, City of Atlanta; G. H. Burnett, Getz Exterminators, Inc.; F. A. York, Sr., F. A. York, Jr., and R. O. Crocker, all of York Exterminators; W. H. Sullivan of Bruce Terminix Co.; Wm. J. Ormsby, Southern Bell Tel. & Tel. Co., Inc.; H. H. Landgrebe, Bruce Terminix Co.; Dean Roberts, Health Dept., City of Atlanta; Dick Nolen, Nolen Exterminators; Max M. Cuba, Public Accountant; E. C. Gillette, Southern Bell Tel. & Tel. Co.; Otto Orkin, Owen King, and W. H. Crawford of the Orkin Exterminating Co., Inc.; Milledge Murphy, Jr., Georgia Dept. of Entomology, and W. O. Buettner, National Pest Control Association Secretary, Brooklyn, N. Y.

Miami, Florida

The Pest Control Operators of Miami, Fla., held a meeting at the Hotel Alcazar on January 26. John Mand of the United Pest Control System called the meeting in honor of the visit being made by "Bill" Buettner, Secretary of the National Pest Control Association.

There was a lively discussion of the conditions in Miami and Miami Beach, largely reflecting the attitude of apprehension over the number of fly-by-night operators that seem to run to Florida. Classified telephone directory advertising and sales practices played a large part in the discussions.

Those present were: William Snare and Mr. McDonald of the Biscayne Exterminating Co.; F. G. McGrane of the Coastal Chemical Mfgrs., Inc.; E. J. Gummoe of the A. A. Exterminating Co.; Truly Nolen of the Economy Exterminating Co.; Joe Postal and E. Merlin of the Orkin Exterminating Co.; John Mand of the United Pest Control System; Charles M. Sample of the Florida Exterminating Co.; G. P. Pullem of the Pullem Exterminating Co.; Herman Schatzberg of the General Exterminating Co.; F. B. Alleman of the Terminix Co. of S. Florida, and W. O. Buettner, Secretary of the National Pest Control Association.

Memphis Pest Control Association

ROTARY CLUB HEARS HOW TO SNUFF PESTS

Study of Habits Necessary, Official Declares

There is no magic or witchcraft connected with pest control. Its progress has been made possible by scientific research and the work of entomologists, William O. Buettner of Brooklyn, Secretary of the National Pest Control Association told the Rotary Club at the Peabody Hotel, January 24, 1939.

Describing how rodents, insects and vermin menace health and cause property damage into millions, Mr. Buettner said, "During epidemics and plagues the pest problem has been at its greatest."

The powder dusting or liquid spraying methods of fighting pests have been vastly improved upon. The present method is to eliminate pests by studying their habits, understanding their life cycles and destroying their haunts, and by carrying out such intelligent control methods only properly trained pest control operators are qualified to do.

Mr. Buettner was introduced by W. B. Hill, National Director of the National Pest Control Association. The following officers and members of the Memphis Pest Control Association local chapter were also present: Arthur Murray, President; Herman Carle, Vice-President; Louis Kotler, Secretary-Treasurer; R. Cluck, Ben Almon, B. F. Jenkins. The following attended as guests of the Memphis Pest Control Association: Dr. L. M. Graves, Supt. Department of Health, Memphis; Mr. A. H. Fletcher, Sani-

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Solve your *odor* problems and you will help to solve your *order* problems. Today, bad odor is "on the spot." The demand is for better smelling products.

Givaudan-Delawanna has been producing odors for fly sprays, insecticides and disinfectants from the very first. We have grown up with the trend, and have developed specific odors for specific products.

If you want to give your product the added sales factor of a pleasant odor, just send in your problem to us and let our laboratories demonstrate how efficiently and inexpensively we can meet your special requirements.

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DELAWANNA, INC.
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SPECIAL
THALLIUM SULPHATE BAITS!

for RATS and MICE: TAT Mixed Seeds. Wheat, barley, hulled oats. Seeds colored. Active ingredient ***Thallium Sulphate*** 1%.

100 lbs. ..... $17.00 25 lbs. $5.00
50 lbs. ..... 9.00 10 lbs. (min. quantity) 2.50

TAT Canary Seed. Uncolored. Active ingredient ***Thallium Sulphate*** 1%.

100 lbs. ..... $21.00 25 lbs. $6.00
50 lbs. ..... 11.00 10 lbs. (min. quantity) 3.00

for ANTS: TAT Ant Syrup—or jelly if preferred. Syrup VERY heavy—weight approximately 10 lbs. per gallon.

SPECIAL PRICE PER GALLON $4.25

Active ingredient ***Thallium Sulphate*** 1.30%.
(1.30% proper amount for most effective control)

BED BUG CONCENTRATE. NEW! ALMOLENE D. Dilution rate 1:128. One ounce Almolene D added to ONE GALLON base oil makes completed spray. **May be perfumed.** Simple to mix—effective—economical.

Pint (16 oz.) ..... $2.00 Gallon (128 oz.) $12.00
Cuts Cost of Active Ingredient to Less Than 10c per Gallon.

TAT TERMITE C: Paint replaced timbers with this product. Protects timber against termite attack or rot (dry or wet). Colorless. Such treated timber may be painted, glued, etc. Offers additional protection when treating for termites.

TAT TERMITE C, 1 Gal. ..... $1.60 5 Gal. $8.00

Other popular TAT Products include TAT Ant Traps, TAT Roach Traps, TAT Ant Bait, TAT Rodent Bait, Ace Ant Traps, Treated Whole or Shelled Peanuts, etc.

Prices F.O.B. Upper Montclair, N. J.

TERMS: Cash with order. Usual trade terms after credit is established.

Manufactured By

SOILICIDE LABORATORIES Upper Montclair, N. J.
Largest Manufacturers and Distributors of Finished Thallium Sulphate Baits

tary Engineer, Department of Health, and Mr. Ralph Logsdon, Director of Convention Bureau. The Memphis Pest Control Association were the local hosts of the National Association two years ago at their annual convention.

Nashville, Tenn.

For the first time pest control operators held a meeting at Nashville, Tenn., on January 24th. The dinner meeting was held at Noel Hotel and called by Charles Rosenthal and W. C. Whalen on the occasion of a visit by William O. Buettner, secretary of the National Pest Control Association.

Several members of the Memphis Pest Control Association made the trip to Nashville and took part in the meeting emphasing the value of local association activities. Mr. Buettner outlined the general purposes and program of the National Pest Control Association and Louis Kotler, Herman Carle, W. B. Hill and Arthur Murray spoke of the progress made by the Memphis Pest Control Association. It is planned to hold another meeting at Nashville in the near future.

Among those present were: Miss Kathrine Lewis and Charles Rosenthal of the Orkin Exterminating Co., Nashville, Tenn.; W. C. Whalen and E. A. Merrick of the Termite Eradication Co., of Nashville, Tenn.; Jack E. Gooden, M. W. Gilliam and H. W. Pride of the Terminix Tennessee Co., of Nashville, Tenn.; Louis Kotler, Orkin Extermination Co., Memphis, Tenn.; W. B. Hill, Knox-Ant Corp., Memphis, Tenn.; Herman Carle, International Ratin System, Memphis, Tenn.; Lewis Short, Eason-Morgan Co., Nashville, Tenn.; Arthur Murray, Termite Construction Co., Memphis, Tenn.; and W. O. Buettner, secretary of the National Pest Control Association, of Brooklyn, N. Y.

Indianapolis, Indiana

Seven Indianapolis pest control operators met on Saturday afternoon January 21 at Hotel Washington. The guest was William O. Buettner, Secretary of the National Pest Control Association who spoke on the progress of the Association and discussed among other subjects Legislation, Specifications for Termite Control, and possible meeting of all pest control operators of the state of Indiana.

A committee composed of Charles O. Partlow and Ralph Griebenow were chosen to confer with Prof. J. J. Davis relative to holding a state meeting with the possible idea of forming a state association and discussing the general problems of the industry.

Among those present were Edward Arnott, who as director of the National Association made the arrangement of the meeting, Ray Collins, J. E. Nicholas, George Spellios, E. E. Edwards, Charles O. Partlow and Ralph Griebenow. Kenneth McLeod and Robert Sturtevant of Buffalo, New York, were visitors at the meeting.

St. Louis Pest Control Association

The St. Louis Pest Control Association held a meeting at the York Hotel, January 23 to welcome the national secretary, Bill Buettner. Among the subjects discussed were Legislation, Cost and Accounting, Fumigation Operations and Ethics. President H. H. Cassilly presided. John P. Linn of Omaha, Nebraska, paid a surprise visit.

Among those present were: Roy McCollough, Modern Fumigating Co.; W. T. Exner, Termite Control Co.; Charles A. Maly, Maly Bros.; Charles H. Bowen, Antimite Co.; John P. Linn, Industrial Pest Control, Omaha, Nebr.; Chas. Denny, Charles Denny & Co.; E. F. Sennewald, Sennewald Drug Co.; Louis C. Traband, Louis C. Traband Co., East St. Louis, Mo.; R. R. Fox, Monsanto Chemical Co.; W. B. McSorley, Jr., Huttig Sash & Door Co.; G. Clem, Rose Exterminator Co.; H. J. Bromfield, Reliable Exterminator Co.; Thos. C. Raley, Getz Exterminator, Inc.; H. H. Cassilly, City Fumigating Co.

It looks like Mr. Linn was looking for location in St. Louis.

St. Louis Association

The annual banquet and installation of officers of the St. Louis Pest Control Association was held at the York Hotel on the evening of January 11th. The following officers were installed for the coming year: H. H. Cassilly, President; Charles Denny, Secretary - Treasurer; Roy McCullough, Vice-President. Board of Directors: William Martin, Chairman; Alton L. Logan, Charles Maly, William Exner.

There were twenty-seven present which included members, wives and friends. Entertainment was furnished for the evening and dancing followed the banquet.

Plans were discussed for the coming year, which included suggested speakers from the University of Missouri, University of Illinois and the State Entomologists who are to be invited as guest speakers at our meetings during the coming year.

Mr. Lawrence, representing the Chamber of Commerce, gave a brief address and Mr. William Tiemann of the Better Business Bureau also gave the members an idea of what the Bureau was doing to help business for the coming year.

Northwestern Pest Control Association

The Northwest Pest Control Association at its annual meeting held on January 10, 1939, held election of officers with the following results:

Wm. O'Reilly of Plunkett Exterminating Co., president; H. N. Harmer of Rose Rat Exterminator Co., vice president; J. A. Athelstan of Athelstan Products Co., secretary; E. H. Leitte of Fumigation Service Co., treasurer.

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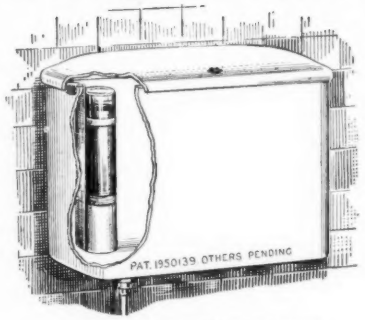

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Concealed Guardian of the Modern Bath Room

STERYL-FLUSH disinfects, deodorizes and keeps the entire toilet system clean.
Does not cover up offensive odors, but removes them completely.

STERYL-FLUSH fits inside the toilet tank where it operates unseen.
It operates only when the toilet is used by flow of water.

Non-corrosive and non-injurious to the hands, but has a disinfecting strength four times stronger than phenol (carbolic acid).

Pleasantly scented with pure pine oil — just enough to give the bath room a faint, cleanly odor of careful attention to sanitation.

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To Kill Bugs Effectively
Use
HOUCHIN'S
INSECT POWDER GUNS, BELLOWS and BLOWERS

WRITE FOR COMPLETE CATALOG
Illustrating Applicators for Every Type Job.

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Termax Sun-Ray Moth Proof

Makes For Satisfied Customers

Effectively eliminates moths, tow bugs, tobacco worms, carpet beetles, linen worms, and other similar pests.

COLORLESS, ODORLESS, STAINLESS, NON-EXPLOSIVE
EXTERMINATOR - ECONOMICAL - INEXPENSIVE

Send for batch of convincing unsolicited testimonials and details of special proposition for pest control operators.

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TERMAX CO., INC.
2288 University Avenue, St. Paul, Minn.

Omaha Pest Control Association

At the regular meeting of the Omaha Pest Control Association held on December 31st, Joseph P. Hahne was elected chairman of the association for the year of 1939. John P. Linn, who has been chairman, declined the office for another year, feeling that the work should be spread around.

The Omaha Pest Control Association submitted its final report for the Sixth Annual Convention of the National Pest Control Association by adding, like their predecessors, a surplus to the General Convention Fund of the Association. (Editor's Note: Many are the favorable comments continuing to be made about the splendid convention and exceptional hospitality enjoyed by all who were privileged to attend the convention.)

The Omaha association plans to be represented at the Southern Pest Control Operators Conference being held at Baton Rouge, La.

California Pest Control Association, Inc.

Districts No. 6 and No. 7 held a joint session in San Francisco. It was designated "ladies" night, an excellent dinner being the feature of the evening. About thirty attended. The results of the annual election follow:

President, A. T. Parsons, 1st vice president, J. E. Baechler; 2nd vice president, S. L. Strang; secretary, Chas. Menard; treasurer, Geo. W. Peterson.

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The latest helpful informative service literature will be sent to you without cost or obligation. If in addition there are any particular pieces of literature offered by advertisers in this issue you are interested in receiving, either write them direct, or if you prefer, please send us such requests.

Please note, however, that you must request each booklet on a separate letterhead, though they may all be mailed in the one envelope to 514 East 14th St., Kansas City, Mo.

ROTENONE INSECTICIDES
Derris—Timbo—Cube

Informative illustrated brochure discussing Rotenone Roots as Insecticides; Reminiscent—and Romantic. The development of Derris Root as an Insecticide. Cube and Timbo from South America. Rotenone the principal constituent. Is Derris poisonous to man or animals? Do Derris, Cube and Timbo deteriorate exposed to light and air? Insect control chart. Powdered Derris Root used as a spray material. Rotenone added to Pyrethrum Sprays. Derris in Livestock Sprays. Derris in Flea and Lice Powders. The labeling of Insecticides. Deridust. Derris Extracts, etc.

FREE COPY MAY BE HAD BY ADDRESSING PENICK, c/o Pests.

EXTERMINATOR FOR MICE

Circular describing mice exterminator in seed form for use by professional exterminators, storage and warehousemen, institutions, hotels, restaurants, food and drug establishments, private homes and apartments. Also further information on Jelly for sweet and grease eating ants; concentrate for crawling and flying insects; compounded powder for roaches, ants, other vermin; concentrate for bed bugs and eggs; motor vaporator, etc.

FREE COPY MAY BE HAD BY ADDRESSING LUCAS, c/o Pests.

PARADE OF SANITARY CHEMICALS AND ACCESSORIES

Catalog with special section devoted to MOTH PREVENTIVES; also listing deodorants; disinfectants; essential oils; insect dusters; insecticides — liquid; insect powders; liquid soap; mice seed; polishes; rubber blowers; special cleaners, sprayers, etc.

FREE COPY MAY BE HAD BY ADDRESSING ELKAY, c/o Pests.

Thos. W. Houchin Corp. desires to call the attention of pest control operators to the possibilities of creating additional business through the sale of powder put up in

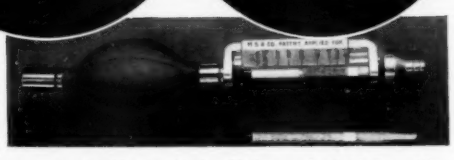
(Continued on Page 26)

Here's DOUBLE-BARRELLED SAFETY in handling HCN!

1914 25 YEARS OF SAFETY PROGRESS 1939

M·S·A APPROVED "GMK" MASK

M·S·A HCN DETECTOR



Knowledge of the extent of your hazard . . . *protection* when protection is required! These essentials in pest control with HCN are perfectly supplied by the M. S. A. Hydrocyanic Acid Gas Detector* and Bureau of Mines-approved "GMK" Mask, for Hydrocyanic Acid Gas, *plus* every demand for convenience, speed of application, comfort and durability. The easy-to-use new Detector gives you precise information as to the concentration of HCN in questionable atmospheres, in less than two minutes—so simple that any workman can use it. The "GMK" Mask combines safety for the wearer with the ultimate in comfort and working freedom! You owe it to your business to have complete information on these important M.S.A. products . . . let us send you our HCN Detector Bulletin No. DZ-1, and Industrial Gas Mask Bulletin No. ED-3.

*A mutual development of E. I. DuPont de Nemours and Company, Inc., and Mine Safety Appliances Co. Patents applied for.

MINE SAFETY APPLIANCES COMPANY
BRADDOCK, THOMAS & MEADE STREETS, PITTSBURGH, PA.

FOOTE THALLIUM

Put your FOOTE down on rats with Thallium Sulfate.

ODORLESS—TASTELESS

— WRITE FOR LITERATURE ON USES —

FOOTE MINERAL CO.

1609 SUMMER ST. PHILADELPHIA, PA.

NO SPILLING AND SPLASHING!

WAHLERT'S "SAFETY" CARBOY DRAINER

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powder guns for the housewife. Most housewives would prefer such a blower even though priced a few cents more when they understand it is complete and will do the work very efficiently.

Dealers who have tried this idea claim excellent results. Write for more information with complete catalog to Houchin, c/o Pests.

MODEL OF THE CLOTHES MOTH LARVA

Since the general public has no conception of the appearance of this tiny worm that causes destruction to clothes, furniture, rugs, furs, etc., wherever this model has been used in demonstrations the effect on the public has been startling. Properly displayed in your store or window, it will bring results in the way of increased business. Model is 15″ long, made of durable plastrine composition, all parts accurately reproduced and colored. It is provided with a practically invisible base giving the larva a most natural appearance when displayed on woolens, furs, etc., to simulate its feeding habits.

Complete data on this display as well as life-history displays of insect pests, such as Termites, Clothes Moths, Roaches, Bedbugs, Carpet Beetles, Dermestids, etc., may be had BY ADDRESSING SCIENTIFIC c/o PESTS.

A new piece of literature describing DeHaen's Fixanal Preparations for standard solutions is now available. Fixanal Preparations are correctly weighed and standardized analytical chemicals, which when diluted according to directions produce accurate volumetric solutions ready for instant use. Accuracy certified to be within 2 parts per 1000. Special normalties are available for sugar factories, oil and fat research laboratories, wine tests, blood and urine analysis, milk tests, smelting works laboratories and benzol tests.

A copy may be obtained free by addressing Pfaltz, c/o PESTS.

A very interesting and educational pamphlet entitled "Thallium and Its Uses" is now available, which discusses the history, extraction, physical properties, uses with formulas, etc.

The booklet is free and may be obtained by writing Foote Mineral Co., c/o PESTS.

ANT TRAPS—ANT BAIT

Circular describing house ants; outdoor ants; roach trap; placing traps; rodent bait; method of control; moles; termite, preparations, etc.

FREE COPY MAY BE HAD BY ADDRESSING TAT c/o PESTS.

AROMATIC PRODUCTS

32-page catalogue, 8½x11, having special sections devoted to Perfume Bases for Insecticide Sprays; for perfuming and coloring Paradichlorbenzene Crystals and Blocks in one operation; for perfuming and coloring naphthalene flakes and blocks in one operation; water soluble perfume oils for theatre sprays, etc. Of special interest to every pest control operator and insecticide manufacturer. Write for sample for fly sprays; for napthalene and paradichlorbenzene; for water base product; for formaldehyde products, etc.

FREE IF YOU WILL WRITE FELTON, c/o PESTS.

MOTH PROOF

Folder of unsolicited letters showing effectiveness of this moth proofing preparation. Folder discusses new odorless, stainless, non-explosive exterminator for moths, tow bugs, tobacco worms, carpet beetles, linen worms, and other similar pests.

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Interesting data which discusses Control of Rodents with Thallium Sulphate—with suggested formula; Control of Ants with Thallium Sulphate with suggested formula with additional information on Thallium Sulphate as a rodent poison.

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Twenty-eight page pamphlet discussing facts you should know about pyrethrum flowers; dilution table for plant sprays; dilution chart pyrethrum soap; how to mix effective baits; derris root, etc. Of special interest to jobbers and exterminators.

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48-page booklet in colors and illustrated, covering their entire line of Alkalies and Special Products, with a special section dealing with Para-Dichlorobenzene and Ortho-Dichlorobenzene.

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Folder describing sprayers for termite control work.

COPY MAY BE HAD BY ADDRESSING HARDIE c/o PEST.

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POSITION WANTED requiring knowledge of chemistry and entomology. Exceptional academic record in University of Illinois. Bachelor's degree. No previous experience. If interested, write Pests, Dept 200.

CUTS of rats, roaches, moths, bedbugs, ants, flies, etc. Pests, Cut Dept.

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From the MANUFACTURER TO YOU ! !
G & S RAT GLUE
NON-POISONOUS, ODORLESS, LIVELY GLUE
5-lb. Tins @ $0.40 per lb.
25-lb. Tins @ .38 per lb.
45-lb. Tins @ .35 per lb.
G & S PREPARED GLUE BOXES
Each Box Ready for Instant Use.
NO FUSS, NO HANDLING, SIMPLY REMOVE COVER
1 Dozen Lots..... $3.00 per doz.
3 Dozen Lots..... 2.75 per doz.
Also "2 in 1" Glue Boards.
F.O.B., Brooklyn, New York
Manufactured and Distributed By
G & S Exterminating Supply Co.
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THALLIUM SULPHATE
Manufactured by
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Var-Lac-Oid Chemical Co.
116 BROAD ST., - NEW YORK, N. Y.

Kills Ants!

A DOSE ON THE SURFACE
KILLS THE QUEEN
IN THE NEST

MAGIKIL JELLY

The Original Jelly Ant Bait.

SIMPLE **QUICK** **SURE**

Magikil Jelly is a product that eliminates the "I hope it works" feeling when using it for service work, or over-the-counter sales. Why not try this material and prove to yourself just what it will do. We know that Magikil Jelly is effective, as it was developed by one of the leading universities in the United States and further backed up by 5 years of steadily increasing sales. Packed in household traps, 1 oz., 3 oz., 8 oz., tubes and bulk for service work.

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